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BUSINESS BUDGETING

·TECHNICAL NOTES MAGAZINE·

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ACROSS THE EDITOR'S DESK

Last year in making our bow as editor of this here magazine, we expressed the hope that we could include a "Letters to the Editor" column. The "letters" columns of magazines like Life, Time, Colliers, and others have always held a particular fascination, and it was easy to picture ye editor pouring over scores of letters on technical subjects, creating discussions month after month, and providing good reading material for our members.

Alas and alack! We receive quite a few letters, but they all seem to read the same .... "Dear Editor: I sure do like the new and bigger magazine; keep it up!" While our vanity is greatly satisfied with such letters, our ambition for a genuine discussion-type letters colymn remains unfulfilled.

Get the hint! Pick up that dictaphone and SPEAK! Find fault with some of the articles ... tell us your favorite budget short-cut ... call somebody a nasty name—— anything, ANYTHING to create an interesting letters column. How about, fellas ... won't you write me today?

Lacking some genuine letters, I am forced herewith to make up some of my own. If these don't satisfy you, confound it, write one of your own!

"Dear Editor:

I am a high school graduate, and seen your magazine in our library trash can. I flunked algebra and English, but never missed a school dance and scored two touchdowns in the championship game. I picked the last two winners of the Kentucky Derby, and my dad says I ought to make a good forecaster. Could you find me a job as a budget-teer? I will work cheap, providing I get a pretty secretary.

(Signed) Silars Sidecar
Gravelswitch, U.S.A.

"Dear Editor:

In your last issue you carried an article on "How to Prepare a Sales Forecast", which I thought very thought provoking. The only trouble, my boss saw it, too, and wants to know why every other budget director, except me, seems to be able to work out a sales forecast that can be used for something besides hanging on the wall. Maybe our business is a little different than most, but the boss still wants a better job of forecasting. Please print more articles on this subject. Thank you."

(Signed) Jos. T. Kokes
Budget Director,
Cambridge Buggy Whip Co.

"Dear Editor:

Can you tell me how to go about joining the N.A.C.A.? Thanks."

(Signed) Horton E. Everett
Tokyo, N.Y.

"Dear Editor:

Last month, my supervisor quit his job to go on relief, and left me in charge of the Accounting Department. I have been getting along pretty good, but I have a question I need answered and am a little afraid to ask anyone around here.

Is the Debit column the one on the right, or the left?"

(Signed) Emil Snodgrass
Talahassee.

WHAT FACTORY MANAGEMENT EXPECTS FROM BUDGETING

By: Frederick J. Port

Director of Engineering, Electric Storage Battery Company, Cleveland, Ohio

Calling all cock-sure Budget Directors! Read a sincere no-punches-pulled article on the shortcomings of Budgeting, as seen by a Factory-man! You may find some basic accounting faults, but there's one thing certain. . .here is a realistic, down-to-earth soul-searching admonishing that will make you squirm, and like it.

I should like to first thank you for the rather unique opportunity you have given me, as a factory man, to write an article for budget men, about budgets. In preparing this article I have tried not to be overwhelmed by the fact that I am writing for a group of specialists about their own specialty.

I am writing about deficiencies in present budgets as I see them as a factory man. I'll warn you in advance I have arranged my points roughly in an ascending order so far as their controversial nature is concerned. The farther you read the more likely you are to find yourselves in disagreement with the points covered. Please remember I am not against budgets, I am only against some of the deficiencies in present budgeting methods. The phrase the English use is appropriate - "His Majesty's Loyal Opposition".

FIRST - PROMPTNESS!

The first thing we expect from budgeting is promptness in reporting figures. I won't belabor this point because it is so obvious, but I think you will agree it sometimes gets insufficient attention. It seems to me that any daily figures reported should be reported early enough the following day so that some action can be taken before the close of business. Personally speaking, the only daily figures I want for the factory are those covering labor variances. For day to day control in the factory, these seem to me to be the most important. By promptness in reporting weekly figures, I think in terms of 3 or 4 days after the close of the week and I don't see any need for a lot of detail in a weekly report. We keep it quite simple by reporting figures only for the broad general classifications; such as, wages, labor variances, overtime, supplies, and services. As for monthly budget reports, here I think we should have "the works" so far as detail is concerned and I don't think we should be satisfied if it takes longer than 2 weeks after the close of the month.

The next point is simplicity. This is something we all give lip service to, but do we follow through in a sincere manner? I recall some statistics I read months ago: "since the early forties the number of factory workers in this country has risen by 35%, but that during the same period the number of office workers has tripled." Now these statistics may be faulty in detail but they are of the right order of magnitude, of that I'm sure. How much of this is your specialty responsible for? We factory people don't like to see savings made in the factory offset by extra costs in the office, especially when these extra costs are at least partially justified by the claim that the factory costs are being controlled.

Several years after the war I sat in a meeting in which the controller was bemoaning the fact that we weren't making as much money as we should because we had a bigger engineering force, we had a larger sales force and we had a big tooling program, that we had 50% to 60% more overhead personnel in these various departments than in the immediate pre-war period. When the President demanded to know the same figures for the controller's office staff it turned out that the controller had 200% more people under his direction. The controller insisted that this was not pertinent. "After all, before the war we had only a rudimentary accounting system. Now we really know what our costs are in each department and we have them controlled with budgets."

What Does Budgeting Expect of Factory Management?

We hope the accompanying article will bestir some of your budget men to take pen in hand and compose a "Letter to the Editor", commenting on some of the points which Mr. Port brings out so firmly.

Perhaps you have some points regarding the budgeting function, to answer or override Mr. Port's. Budget men, arise! What do you say?

Of course, the controller had valid reasons, but so did the heads of the other departments. The point is, the controller felt that his own case was an exception to his own rule and in my opinion, in that case at least, he had allowed his procedures to become far too complex and costly, issuing frequent and voluminous budget reports which served no real purpose. Fred Allen once described a yacht as being so big that even the lifeboats had lifeboats. We should be careful we don't reach the point where we have to have controllers to control the controllers.

BUDGET SHOULD BE SOUND

There is only one sentence in this next requirement, namely, that "budgets should be sound at all levels of production." The claim that all factory budgets should be variable budgets certainly will not start any arguments in this group.

A characteristic we expect from budget administration, and often do not get, is a sound and valid evaluation of operating results compared to the budget. Somehow budget allowances come to have a sort of sanctity which they oftentimes don't really merit. We should be humble enough to recognize that establishing a budget for a future year is not an exact process and to avoid the temptation to take these over-and-under figures at face value. It is very easy for any of us to become infatuated with our own figures and conclusions. Too often factory managers receive memos which purport to interpret operating budget results which contain either undeserved commendations or undeserved jibes.

Factory management may be good, bad or indifferent, but I think you have to agree that factory management is usually realistic and usually knows whether a job has been done well or badly. It is the budget man who suffers if a feeling develops among factory management that performance is being incompetently judged, whether favorably or unfavorably. I think many budget men would be well-advised to investigate more thoroughly before pronouncing judgement and to be more cautious, with respect to both bouquets and brickbats.

Another thing we would like to have is a voice in the construction of the budget itself. If the factory man and the budget man sit down together and review the historical data with an open mind, there should not be any difficulty involved in arriving at their allowances. We have

made a practice of doing this each fall for the ensuing year and we look at charts on which have been placed points representing each month's expenses in a certain account for the last three years. If the points indicate a wide spread each point is then identified as to month and year.

If an improvement is noted during the three years, more weight is given to the points for recent years than for the older data. If, however, an outstanding improvement is shown during the most recent year, we don't establish the new allowances right down to the bone compared to the best and most recent data. Conversely, if we find an unfavorable trend from year to year we are inclined to disregard the late data and to hold to the previous statement allowances. After all, we expect budget allowances to become tighter as time goes on, but we also want them to be realistic.

WHAT ABOUT VARYING DOLLAR VALUE?

If budget variations are truly to represent variations from a correct standard, as certainly they should, then we can't gloss over and ignore the varying value of the dollar. Several years ago, when price indices were changing rapidly, we found it necessary to take this into account by adjusting the historical data for wages by the proper correction factor to bring them up to current conditions. We used a similar technique for correcting the historical data on supplies by using a correction factor based on an appropriate price index for such items. Perhaps many of you have taken a similar approach and even if you have not, I am sure you won't consider it improper. However, I have participated in friendly arguments about what is the proper thing to do when wage rates, or power rates, increase during a budget year.

I gather that it is the consensus among budget people that a budget once established for a year should be allowed to stand and that if the value of the wage dollar or the power dollar decreased during the year, let it create an unfavorable variation and let that variation stand out where all can see it, but that one should not change the basic budget. I cannot agree with this viewpoint. If the company is operating the way it should be operated, it seems to me the budget should reflect that fact. If you would like to see the factory management take pride in being able to set up a proper budget and then beat it, then it's not right to discourage them by rigidly holding to allowances based on a different type of dollar. Obviously the budget cannot be changed everytime somebody puts out a new price list. But when something basic occurs, such as a general wage increase, then it seems to me the budget man should accept cheerfully the inconvenience involved and make an appropriate correction in the allowance. It is far better to do that than to put factory management in the position of continuing to make excuses month after month until the year closes, no matter how valid the excuses may be.

If the budget is beaten in spite of the unfavorable change in wage rates, then the favorable variance is understated and the fact will never be brought to light. I hold that that is a bad thing - not just because I might not get some credit I deserve, but because of its effect on morale and the fact that successes in an organization breed further successes. Credit to the whole factory organization should be given when it is due.

UNUSUAL MONTHLY EXPENSES

Another deficiency in any factory budget I have run across is the method of handling expenses which occur in one or more specific months. The usual technique seems to be, simply to take the annual cost, divide it in 12 equal parts and allow for it each month. I am referring to such items as heating costs, seasonal outside warehousing costs, seasonal hiring and training costs, etc. Does it make good sense, where you expect to spend $12,000 per year to heat the plant to allow $1,000 per month, each and every month? The first thing that happens is that we spend 1/4th of the annual budget in January and get an allowance of 1/12th of the money. I have the impression that most budget men will reply, "Yes, but that is understandable and explainable". But the trouble is someone upstairs doesn't have the time to make an analysis, puts through a request that the January operation be analyzed in detail and reasons reported for the variances. Then, memos start being passed back and forth and a lot of unnecessary time and effort is wasted, particularly when you realize that this happens on perhaps 5 or 6 important expense items.

Why don't we make our budget reports mean more by at least allowing for those seasonal factors that we know about? Accounting techniques are available for handling such things as this and I think they should be applied to budgeting to make a variation reported in that monthly budget report as true a figure as is practically possible. We should not have to wait until the end of the year to know how we are doing and we should not have to spend our time answering questions that should never really be asked.

In the application of budgeting to factory operations there is another inaccuracy or deficiency which we could call the acceleration effect. I suspect this is a difficult thing to handle in a budget but it might be worth mentioning here. If in your car you are accelerating from 40 to 60 M.P.H. you are using more gas as your speedometer passes the 50 M.P.H. level than when you are cruising at 50. If you spend a lot of time accelerating and decelerating you are not going to get very good value for your gasoline dollar and, of course, the same thing holds true with respect to the level of production in a factory. The proper budget allowances for a certain level of production depend not only on that level of production, but, also, upon how long you have operated at that level and how long you intend to continue operating at that level.

Budget allowances which are established upon historical data during a period of level production are going to be impossible to attain if acceleration and/or deceleration are involved in the coming year. Perhaps most companies cannot afford to refine their budgeting techniques to the extent necessary to arrive at budget allowances for acceleration itself. On the other hand, if we actually study the matter perhaps we would find it a lot simpler than we anticipated. We in the factory make a lot of decisions on very little more than just judgement. In an industry, such as the battery industry, which has the characteristic of wide swings in required levels of production, we frequently have the situation where we anticipated for the ensuing "X" number of weeks that our present production level is entirely inadequate. The question comes up, should we hire or train more employees or shall we simply use overtime with our present employees, or should we use some combination of these two? Which answer will produce the lowest costs for the cominge period?

We make these decisions on the basis of past historical experience combined with our judgement. We don't get help from the budget people and it may be that budgeting is missing an opportunity to be of service. It seems to me that when the technique of budgeting factory operations

reaches its ultimate refinement it will include a basic budget for steady operation at a given level and will, in addition, provide additional allowances when acceleration or deceleration is involved. Until such time as budgeting is both willing and able to treat this subject properly, we should frankly admit that it is being ignored and keep this fact in mind when evaluating operating results.

HANDLING OF OVERTIME

How about our techniques for handling overtime? In a business subject to substantial swings in operating level, overtime is often the most economical way to obtain needed extra production. It seems to me that budget techniques for this are not well developed. We follow the rather simple expedient of allowing for a small amount of regular overtime - most of which goes into maintenance work. Then, under certain special conditions we also allow the actual overtime cost as a budget allowance. This occurs only when we have an extra scheduled work day during a week in which we are already operating at 100% of plant capacity - Is this proper? I think so, as far as it goes. But, how about other cases when we find it necessary to work an extra half day or so in order to provide customer service?

Under the rule we follow, there is no budget allowance for such instances and here I think we get on to controversial ground. Overtime is an expensive thing and should be avoided. If this needed spurt in production was anticipated by Sales far enough in advance the overtime probably should show as an overage. But suppose it was due to a surprise rush order? Or suppose it is of such short duration that even though it was anticipated in time to hire and train employees, the overtime penalty would be less expensive? It seems to me highly desirable to fix the responsibility for such unusual expenditures and I don't share the same reluctance that most budget people seem to have regarding the possibility of transferring such an extra factory cost out of the factory and into another department, such as "Sales", if that department is really responsible.

This subject leads us rather directly into the allied subject of sales forecasting and the obvious fact that poor sales forecasting creates factory inefficiencies, which unfortunately and unfairly are charged to the factory. To the corporation as a whole, of course it makes no difference to what department these inefficiencies are charged, but if the budget procedure could be modified so as to encourage the elimination of these inefficiencies, then a concrete step forward would have been taken. So, here is another thing which we expect as factory people and don't get, namely, that the budget system be used as a means of encouraging accurate sales forecasts for use in the factory.

If our procedure required the Sales Department to anticipate their requirements in detail and if there were predetermined penalties involved to the Sales Department for inaccuracies I think we could anticipate some rather substantial savings, particularly in businesses which have seasonal characteristics of the magnitude found in the battery business. If forecasts are low, it means that rush orders and overtime are involved; if they are high, it means that unnecessary hiring, training, inventories, etc. are incurred in anticipation of business which does not develop.

The cost to the corporation of errors in either direction beyond a certain percentage could be estimated with reasonable accuracy by the budget department and a predetermined amount could be charged as a sales expense and credited to the factory. This amount should be less than the usual actual cost but large enough to offset at least the major share of extra factory costs. The use of a predetermined amount would still give the factory an incentive to hold the actual cost to the bare minimum. I don't know of anyone who takes this approach but I have seen these wastes in the factory and I think we would all be agreeably surprised by the amount that could be saved in many companies by the forecasting techniques that our Sales Departments could develop with this sort of budget pressure, and by the kind of cooperation our salesmen could develop among their customers if they had the proper incentive to obtain good estimates of their customer's requirements.

TREATMENT OF FIXED COSTS

It is my understanding that one of the current topics for argument among cost accountants and budget people is the treatment of fixed costs or standby costs. It strikes me as something of a paradox to find men who accept wholly the idea of variable budgets, and the principle of fixed costs and variable costs and who conceive of costs as "X" dollars per day plus "Y" cents per unit, and to find that these same men get themselves all wrapped up in fancy formulas for distributing those fixed dollars per day to each department, each work center, and each product. He spends a lot of his own time and that of others doing this work and it is hard for me to understand the evident reluctance to drop all this fictitious sleigh-of-hand work and adopt the natural outgrowth of a variable budget, which it seems to me is to cost only the variable cost of the product.

This seems to be in line with how a factory manager views the operations under his control, namely that the difference between the variable cost and the price of the product is what that product contributes to "fixed costs and profit". As a factory manager it seems to me that anything you say about net profit from a particular product is pure fiction. It seems that all budget people not only know, but proclaim this, and it puzzles me why so few apply it.

I think the answer lies in what for many is the traditional approach to pricing which I will comment on later. Naturally fixed costs have to be recovered before you can show a profit. All I am saying is that time spent in allocating these fixed costs to various products is time poorly spent in my opinion - and the results therefrom may lead to faulty business decisions which is a consequence of even more importance. Haven't you heard accountants and budget people say something like this? "We make money on Line W and we lose money on Line B". If you inquire, "Then, why in the world don't we drop Line B"? they may come back with the statement, "Ah, but if we drop Line B we would be worse off than we are now."

Of course, he could be right but doesn't that kind of conversation still leave you pretty much in doubt as to whether Line B actually does contribute to "fixed cost and profit"? If it does, it must be profitable in a broad sense, or at least beneficial. It only appears to be harmful because of the fictitious distribution of fixed costs. I know we could never settle this argument but at least one manufacturing man hereby "casts his vote".

DANGERS IN BUDGET CONTROL

The remainder of what I have to write about are some of the dangers in budget control. These are intangible, but nevertheless real, because I think I sense in many instances a tendency to enthrone "Budget Control" as the first objective of running a business. It is possible to oversell "budget control" as a concept and a phrase.

(Please turn page)

Phrases and words are very compelling things sometimes, as any advertising man will tell you. I don't like the word "control" used in the wrong places, because I think it can lead to fuzzy thinking about business problems. If we emphasize too much the fact that factory costs should be controlled, we de-emphasize the fact that they should be minimized. Also I do not think that profits should be "controlled"; I think they should be maximized.

I can almost hear some of you thinking "Well, he's just academic - just quibbling over words". But I am not talking about just the word - "control" - I am talking about the "concept of control", particularly as applied to production, profit, and factory costs. Costs can be well-controlled - and still be too high. There is, I submit, a dangerous tendency in modern management to make a fetish of the concept of "control".

Let's be more specific. First, with an example as applied to production itself. I have heard budget men comment favorably on a certain department as being "well-controlled" as demonstrated by the fact that "Every day they turn out exactly the same amount of production - right on schedule! Boy, that fellow really has his department under control". You've heard or seen this many times - but we shouldn't fall for that kind of "malarkey".

Troubles, good days, bad days, absenteeism, etc. are inherent in any complex operation involving materials, machinery, and human beings. A department with such a record is "controlled" all right but either by being deliberately over-manned by the supervisor (and parenthetically the budget based purely on history has never caught up with the fact -- and never will) or it is overmanned because the workers themselves are controlling production (controlling it in the worst sense of the word) in order to protect an improper standard. We may all have a few skeletons of this sort in the closet but if we have become so entranced by the concept of budget control as to look with favor on such a situation, our thinking has wandered very far from our proper objectives as managers.

In a similar vein, let's take a look at the often-used phrase, "Budgetary Control of Profit". This is probably not a very precisely defined phrase but in usage it seems to involve some so-called normal percentage applied to budgeted cost. It is only natural that if you budget everything else, you should budget the profit too. Indeed, this is regarded as the very quintessence of budgetary control and, so it is. Certainly a profit should be planned for, but what I don't like is the sometimes rigid thinking I have run into when a budget specialist approaches the matter of pricing policy. Sometimes he acts almost as if the prices should be set by him as a part of the budgeting process instead of by an analysis of the competitive situation. I am oldfashioned enough to think that profits are meant to be maximized, not controlled.

LET EFFICIENCY SET THE PACE

It seems that if the company's overall efficiency is less than your competitors, you had better abandon your budgeted plan of maintaining a so-called normal profit, use a competitive price and hold your volume up while you correct your lack of efficiency. On the other hand if your efficiency is better than your competitors', it would be better still to price competitively, pick up the extra profit and do something constructive with part of it to make it harder for the others to catch up with you. No two such situations are the same, and it is dangerous to generalize about them, but I am just passing on the observation that there is a strong temptation for the budget specialist, who is constantly dealing with planning and costing internal operations, to look at prices, in a rather rigid way, as merely an extension of his other work, rather than as something entirely apart from his work, a reflection of the marketplace itself.

Now for the last subject - a few comments on the phrase Budgetary Control of Factory Costs - and some of the dangers involved in emphasizing the wrong viewpoint. In the first place I would like to emphasize an important distinction between budgetary control of factory costs and budgetary control of certain other items, such as, say, advertising, capital expenditures, and research. These items last mentioned can be truly and fully controlled by a budget because, for any one year certainly, they can be cut to zero, if you so decide. Also the optimum expenditure is certainly not the minimum expenditure.

On the other hand factory costs are another matter altogether. The factory management must produce what the Sales Department sells; a certain physical amount of output must be obtained - and costs are the result of the output, not the cause. The optimum condition is normally the minimum expenditure. For factory costs, the budget establishes a standard of performance but it does not control the costs in anything like the sense it does for advertising, capital expenditures, and the like.

This is not to say that a factory manager cannot influence his costs, but as opposed to an advertising manager's objective his objective is clear without a budget, because he should be constantly driving for lower and lower costs. In doing so, he may deem it advantageous for the long run to make plant rearrangements, to increase maintenance expenditures, and to undertake other changes which might have a temporary adverse effect on budget reports. The phrase "Budgetary Control of Factory Costs" sounds static - a far cry from a dynamic policy that recognizes "change", and "improvement" and "risk" as normal and desirable.

Those are the reasons I do not like the phrase. Phrases create attitudes and we should be concerned about the very important attitudes of mind which eventually take shape as managerial decisions in the course of running a business. If a factory executive is led to believe that his performance is being judged by how well he "controls" his costs, he may decide to take the safe course of attempting close control as opposed to the risk of an ambitious betterment program, aimed at lowering costs in due time but which will likely cause a lot of variances in the interim.

BUDGET EXECUTIVES - HELP!

You budget people have it within your power to be of tremendous service to your company, but you will not accomplish this if you engender the development of the "play-it-safe" executive, who really in the long run is the least safe for your company. We all know that there is no real long-run safety in standing pat. But if you talk nothing but "control-control", you can create that illusion. If you succeed in selling such a viewpoint to his boss, you can make it an actual brutal fact to the factory executive personally, namely, that for his own good he had better "control" his costs and the devil with the risk of changes.

What does factory management expect from the budget? We expect from the budget supervisor an appreciation of the importance of risk-taking decisions in the factory, not all of which will be successful, and most of which will have temporary adverse effects on cost control. In this area you have a heavy responsibility which you will not find among the duties listed on the formal description of your job.

You cannot oversell the idea of cost reduction but you can oversell the concept of cost control.

CAPITAL EQUIPMENT REPLACEMENT POLICY

By: F. H. Zoeller

Assistant Manager, Property Records Department, Allis-Chalmers *Manufacturing* Co., Milwaukee, Wisconsin

Taking a Scientific Approach to the problem of "When to Replace Capital Equipment", and placing it in Practical application has paid dividends for Allis-Chalmers ... here's encouragement to the Budget Director who is seeking a workable formula to help in this important management decision. This article adapted from a talk presented by Mr. Zoeller before members of the Milwaukee Chapter, N.S.B.B.

One of the many problems that confronts management is the Replacement of Capital Equipment. For perfect timing of replacement, the tool management has at its disposal is capital equipment replacement policy as outlined by MAPI.

Management is vitally concerned with many of the new provisions of the 1954 Internal Revenue Code. Section 462, Reserve for Estimated Expenses, and Section 452, Prepaid Income, were repealed retroactively. However, Section 167 - providing for new methods of depreciation - has received widespread interest and support, and it appears that the new depreciation provision will remain in effect, but with possible changes to correct inequities now apparent. Allis-Chalmers, after careful study, adopted the Sum of the Years Digets Method of computing depreciation.

It is generally recognized that for short-lived assets the Declining Balance Method is preferable, but Allis-Chalmers for the most part employs assets of relatively long life in its manufacturing operations. In view of the more liberal depreciation provision of the 1954 Internal Revenue Code it is now more than ever essential to recognize the importance of a modern, effective Capital Equipment Replacement Program.

DEVELOPING A SCIENTIFIC APPROACH

To our way of thinking, a great contribution was made by the Machinery & Allied Products Institute in developing a scientific approach to the problem of capital equipment replacement when the book entitled, "Dynamic Equipment Policy", authored by Mr. George Terborgh, Research Director of the Institute, was published by McGraw-Hill in 1949. Subsequently, a working tool entitled, "MAPI Replacement Manual", likewise authored by Mr. George Terborgh, was published by the Institute. This text in effect summarizes the original treatise and develops practical applications of the concepts set forth in the original work.

Because every company has circumstances peculiar to itself, we deemed it advisable to tailor the available material to suit our specific needs.

Were it possible to summon from the past a leading business executive of 1850 and send him on a tour of American industry, we may be sure he would greet with astonishment the transformation that has occurred since his day in the arts of management. He would find, of course, a tremendous increase in managerial functions, particularly in the larger enterprises. He would find in the service of the executive a host of unfamiliar mechanical gadgets -- telephones, intercommunication systems, typewriters, dictaphones, mimeographs, and endless profusion of accounting, recording, computing and tabulating machines. He would find elaborated almost beyond recognition such management techniques as cost accounting, production control, procurement scheduling, inventory control, quality control, job classification, sales promotion, market analysis, etc., to name only a few. He would find management members of numerous local and national societies sponsoring a growing body of agreed principles and accepted practice such as N.S.B.B. In these and other respects he would note a century of solid progress.

There is one managerial technique, however, in which our visiting executive would feel very much at home. Given the requisite familiarity with present-day equipment, our visitor could at once make analyses as good as the general run.

That a technique has been substantially unchanged for a century need not, of course, condemn it. It may signify the attainment of perfection. Far from perfection, the prevailing techniques of replacement analysis are not even intellectually respectable. They have, indeed, no real scientific background, but are rather specimens of industrial folklore, handed down from one generation of managers to the next. It is precisely because they are folklore that he would have so little to learn in this branch of business administration.

ELEMENTS OF EQUIPMENT POLICY

A good technique for analyzing re-equipment proposals is, of course, only one of the requisites of good equipment policy. It is, however, a vital and indispensable element. For if management lacks the means to identify, within reasonable limits, the proper timing of replacement decisions in individual cases, it necessarily lacks the means to maintain the most advantageous mechanization of its facilities as a whole. This is a challenge to bring this retarded sector of the managerial arts abreast of the others.

As part of the replacement program in our plants, all manufacturing equipment is systematically reviewed periodically to locate inefficient or uneconomical machine tools. The production superintendent is given a floor plan print showing all equipment under his supervision. With the aid of his general foremen, foremen and assistant foremen, all of these machines are classified in one of two categories. Machines in "A" category are immediately considered for replacement, while those in "B" category do not require analysis at this particular time.

The "A" group included machines which have shown excessive maintenance costs, or which have been outdated by more modern, and more efficient equipment. The "B" group concerns equipment which is as efficient as can be obtained or single purpose production machines which usually serve for the life of the production schedule of the parts they produce. Single purpose machines are usually repaired to keep them operating for the scheduled period.

The planning and time study departments fill out the capital equipment replacement analysis form, which is used to compare proposed new equipment with old equipment. If the analysis shows an appreciable advantage in favor of the new equipment, then it is submitted to management along with a "request for expenditure." Management makes the final decision on replacement.

THREE FACTORS FOR DECISION

There are cases where the analysis shows that it is not advantageous to replace. Normally, such cases terminate at this stage, unless repairs or rebuilding are considered. The first step in applying the formula is to

determine the cost per year for the proposed new equipment. The cost expenditure request analysis form is used for this purpose. Three factors are concerned: (1) installed cost of the equipment, (2) service life, and (3) terminal salvage value. Installed cost is a known amount. The other two must be estimated.

SERVICE LIFE, as here used, represents the number of years the new machine will turn out satisfactory work at competitive prices, beyond which life it would be more profitable to replace it with new equipment. The service life is not necessarily the total useful life of the machine, but only an estimate of the years it will serve usefully on the job for which it is purchased. For example, a machine may be purchased to do a high precision job and later, when it loses its accuracy, it may be degraded to a job requiring less accuracy.

TERMINAL SALVAGE VALUE is the approximate market value of the machine at the end of its estimated primary service life, whether it is sold or scrapped. If it is retained for other work, its value should be estimated at the current market price of similar equipment.

One of the replacement factors which is vital to the Allis-Chalmers replacement method, and is inherent in the MAPI formula is based on the idea that as soon as a machine is put into operation, it starts to become obsolete. This is a cost factor which must be recognized in the first year of operation, as well as in the last. How much of this cost can be charged against the new machine in its first year? The MAPI formula includes a factor for rate of improvement in capital equipment which would be available in the ensuing service life of a machine. It has been expressed in chart form and for convenience, Allis-Chalmers uses the MAPI Graph Chart to determine the obsolescence factor. The factor is called the "Chart Percentage."

COMPARISON OF LABOR COSTS

DIRECT LABOR COSTS for both the proposed and the existing equipment are compared. These costs are based on the same anticipated production in both cases, if the required production can be obtained on both pieces of equipment. If Production requirements are in excess of the capacity of the existing equipment, then the surplus above what it can produce is considered separately. A schedule is furnished to determine supplementary labor costs, resulting from overtime, shift premiums, and fringe benefits.

INDIRECT LABOR includes costs such as supervision, clerical and materials handling. It is found that little change occurs in this category when existing equipment is replaced with similar equipment.

DEFECTIVE MATERIAL LABOR & WORKS EXPENSE resulting from defective pieces or scrap, whether due to material or the operator, is computed and shown on the form as a factor.

MACHINE DOWN TIME is estimated on the basis of production lost through stopping the machine for repairs. In the case of existing equipment past costs are a matter of record in the maintenance department. The fact that a machine is stopped is not the sole controlling factor. If, for example, the machine had parts ahead and it could be placed back in operation before more parts were required, then its idle time would not be charged as down time.

POWER CONSUMPTION for both pieces of equipment is determined. This is entered as the dollar value of electrical, air, gas, or other power consumed.

TOOLING not capitalized in the original cost of the machine, is set up in the comparison. This indicates the annual cost of perishable tools, such as cutters, drills, and reamers.

FLOOR SPACE is evaluated in dollars. If the two pieces of equipment vary widely in the amount of floor space required, then it becomes a factor. However, except in cases of a wide variance, this factor is not considered important enough to compute.

PROPERTY TAX AND INSURANCE is determined through use of a chart set up by the comptroller.

NORMAL MAINTENANCE is estimated,based on experience with similar equipment.

SPECIAL REPAIRS are listed separately and include major adjustments and experimentation, which are not capitalized.

SUBCONTRACT COSTS are figured when, because of down time or machine substitution, the existing machine is not capable of meeting production requirements. In competing with new equipment this cost shows as a factor against the existing machine.

THE FORMULA AT WORK

I shall endeavor to explain, by working through a relatively simple case study, the precise manner in which we use the so-called MAPI formula. I shall not attempt to try to evaluate it by comparison with other methods, nor shall I attempt to expound on its theory. Instead, I urge everyone interested in this scientific approach to the problem of capital equipment replacement to study the works referred to previously, "Dynamic Equipment Policy" and the "MAPI Replacement Manual" written by Mr. George Terborgh.

ALLIS-CHALMERS MFG. CO. Date 2-24-53

CAPITAL EQUIPMENT REPLACEMENT ANALYSIS

WORKS

1 Subject of Analysis (3) Electric & (1) Gas Trucks
2
3 Anticipated Rate of Production For moving material

	PROPOSED EQUIPMENT	EXISTING EQUIPMENT 11299-11289
4	Description: 2-Electric & 1 - Gas Fork Lift Trucks	Purch. Date: 1935-36-37 Tool No. 11491-13226 Description: Lift Trucks
5		
6	Est. Primary Service Life: 10 Years	
7	Est. Terminal Salvage Value = (X) = $ 1,500.00	Years of Life to Date: 15-16-17 Installed Cost: 11,250.54
8	Est. Cost Installed = (Y) = $ 26,100.00	Location: Dept. No.: 1378
9	Terminal Salvage Factor = X/Y = 6 %	Intended Disposal: Scrap Resale, Salvage or Conversion Value $ 0

	FACTOR	PROPOSED EQUIPMENT	EXISTING EQUIPMENT
10	Direct Labor (For Anticipated Production):	$ 21,797.44	$ 29,012.58
11	Indirect Labor (For Anticipated Production):		
12	Defective Material Labor & Works Expense:		
13	Down Time:		
14	Power Consumption:		
15	Tooling:		
16	Supplies:		
17	Floor Space: (If usable)		
18	Property Taxes & Insurance:	523.26	778.49
19	Normal Maintenance:	1,500.00	1,500.00
20	Special Repairs:		
21	Sub Contract Costs:		
22	Other Items (explain on reverse side):		
23			
24	Totals:	D $ 23,787.70	A $ 30,091.07
25			B $ 23,787.70
26	Next Yrs. Variance in Operating Cost: (A Minus B):		C $ 7,303.37
27	(Next Years Capital Cost of Remaining Existing Equipment)		
28	Restorative Repairs $ 18,700.00 / Years Effective 5 + ($16,700.00 Restorative Repairs $ × 6%)		D $ 4,862.00
29	Resale, Salvage or Conversion Value of Existing Equipment $ × 6%		E $
30	Salvage Value Loss, Next Year		F $
31	Total Next Yrs. Cost for Existing Equipment (C + D + E + F)		G $ 11,965.37
32	Total Next Yrs. Cost for Proposed Equipment, Chart 14 % + Int. 6% Total 20 % × $ Est. Cost Installed 26,100.00		H $ 5,220.00
33	First Years Gain (+) or Loss (—) (here replacing existing equipment (G-H) (taking into account Depreciation, Loss of Efficiency and 6% return on Investment)		6,745.37

Approved by: Date: Calculated by: G. Pough Date: 2-24-53

EXHIBIT I

(Continued on Page 16)

STANDARDS FOR BALANCE SHEET ACCOUNTS

By: Research Committee, Milwaukee Chapter, N.S.B.B.

Here's an innovation. . .not a budgeting article based on proven experience, but rather the problem statement and progress report of a research committee! If this project is of interest to you, if you have specific points that you would like to have considered, the Milwaukee Chapter Research Committee will welcome your contribution. The material you provide will be held confidential if you request. Send your material to Mr. Lee Miller, chairman, Community Welfare Council, 606 East Wisconsin Avenue, Milwaukee 2, Wisconsin.

STANDARDS FOR BALANCE SHEET ACCOUNTS

Milwaukee Research Project -- Interim Report

For the last two years, the Milwaukee Chapter's Research Committee has been composed of Walter R. Bunge, Dr. W. D. Knight, Robert Willmore and Lee Miller. The committee started without an assigned topic so that the initial meetings were devoted to discussing various potential subjects. The committee quickly concluded that its interests were in the field of budgeting for balance sheet accounts.

A review of existing literature indicated that published material was not extensive in this field. A discussion of the available "balance sheet ratios" led to the observation that the committee's interest was broader than indicated by ratios alone. An examination of the methods used by banks in granting credit resulted in the conclusion that the financial officer of a company might have other objectives than the bankers, even though companies borrowing from banks would have to submit "bankable" statements.

The committee adopted a hypothesis on which its work is being based. Conclusions have not been formulated. This article has been prepared as an interim report on some of the discussions which the committee has had.

HYPOTHESIS

The committee's assumption is that the principles of "fixed, or standby" and "variable" elements so commonly used today in operations budgeting also apply to items in the balance sheet. The task is to prove or disprove in whole or in part that this basic assumption is true.

APPLICATION OF RESULTS

Before adopting the project, the committee examined the probable use that might be made ultimately of its findings. The committee was not interested in an academic exercise. It wanted to be reasonably certain that its conclusions would be a contribution to the literature on budgeting.

These discussions centered around the question: "What use would be made of yardsticks or standards for balance sheet accounts?" The committee was of the opinion that managements are responsible for the most efficient use of the capital funds available to them. Because standards or budgets have resulted in more efficient operation and coordination of manufacturing operations, it seemed self-evident that proper standards for balance sheet accounts should result in the more efficient employment of capital funds.

Specifically, the committee envisioned balance sheet standards as being used to:

a) Appraise the results of monthly operations and aid in short-term planning.

b) Facilitate management by exception.

c) Determine reasons for deviations from planned operations.

d) Improve long-range planning of capital requirements or test the projected capital requirements of expansion programs.

e) Check performance with company's industry, specific competitors or recognized leaders in other industries.

MEASURE OF ACTIVITY

The committee has not decided upon a preferred measure of activity. Many possible choices have been examined. In the main, these various possible choices are familiar to all; such as, physical units (for example, number of transformers), time units (like, machine-hours or direct-labor hours), gross sales, net sales, conversion income (sales less raw material), standard cost of sales, actual cost of sales, conversion costs (manufacturing costs less raw material) and direct cost of sales.

The possibility of using net worth or some similar unit developed from the balance sheet has also received some attention. In its initial explorations, however, the committee decided to use net sales as a base for two reasons: (1) it was an available figure commonly used in variable budgeting and (2) it might develop to be a figure that would be useful in bridging the gap between operations and the balance sheet, whereas a base selected from the balance sheet probably would not be sensitive to fluctuations in the operating rate.

RATIONALIZATION IN SUPPORT OF HYPOTHESIS

It is not difficult to advance the reasons why one would expect to find an element of "stand by" in some balance sheet accounts. A brief review of Cash and Inventories is given here for illustrative purposes.

Cash (or even Cash and Securities) was regarded by the committee as being a residual account -- the amount on hand at any time being the net result of many different simultaneous activities.

Even within this limitation, it seemed logical to expect to find an element of standby in the Cash account because companies historically have followed a practice of keeping a specified amount of "minimum cash" on hand. The reason for this practice is that payrolls have to be met, raw material has to be bought and supplies have to be purchased. Therefore, a "safety factor" has been allowed for in practice.

It was considered likely that investigations would uncover other reasons for a standby in Cash. It was thought that the manufacturing cycle, the collection cycle, the product mix, credit terms of various product lines, accumulation of funds for tax payments and perhaps a host of other factors would reveal their influence in charting actual experience.

(Please turn page)

On the other hand, the committee speculated that there might be factors that would tend to obscure the existence of a standby in Cash. An example of such a tendency was considered to be the practice of discounting receivables, or pledging inventories on warehouse receipts and revolving bank loans for short-term borrowings.

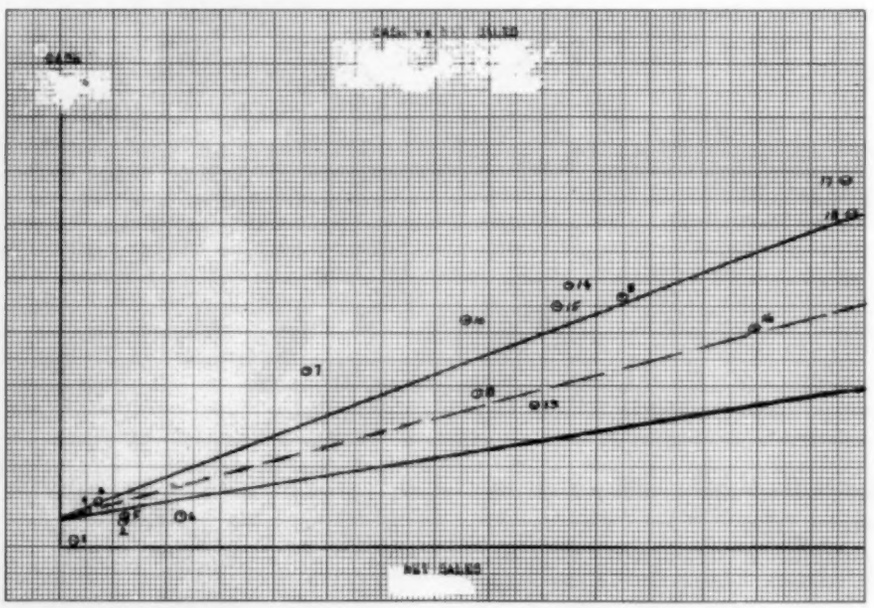
INVENTORIES

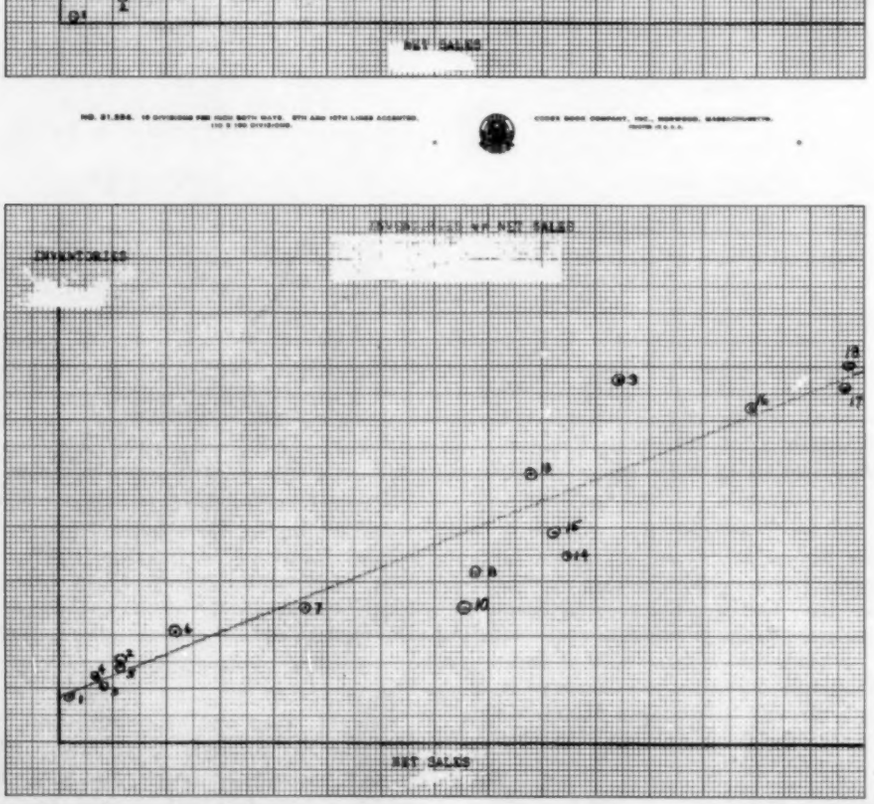
Discussions of inventories likewise brought out the reasons why a standby factor might be expected in Finished Stock, In-Process Inventory, Raw Material and Supply Inventories.

In Finished Stock Inventories, for example, there are the practices of "minimum requirements" to cover a line so that shipments can be prompt and the parts stocks that are maintained for old models so that manufacturing costs can be held to minimum for short runs.

The manufacturing cycle and obsolete parts may also have their influence on standby.

In In-Process Inventories, it was recognized that multiple operations lead to the building of banks of parts between operations so that machines can be operated without downtime. Unbalanced capacity in bottle-neck department could be expected to lead to the accumulation of inventories out of proportion to sales. Another factor leading to the accumulation of parts might be the reservoir built up in the packing department.





(Continued on Page 17)

THE VALUE OF DISTRIBUTION COST ANALYSIS

By: Thomas J. McGann
Professor of Marketing, School of Business Administration, Marquette University, Milwaukee, Wisconsin.

Often minimized in Cost Analysis work is the importance of the cost of Distribution. A thorough analysis of this function can contribute in a major way to the prime objective of any business ... increased profits.

The purpose of this article is to discuss one phase of cost often minimized in budgeting; this phase is "distribution costs." Distribution cost is of course, a part of the total cost picture, just as is production cost. But techniques for refining costs are better with respect to production than they are for distribution and consequently the tendency exists to emphasize production cost analysis efficiency in budget preparation while at the same time using less efficient techniques in budgeting for distributive cost.

DEFINITION

Distribution costs, as defined by J. Brooks Heckert, are "the costs of all business activities necessary to effect transfers in the ownership of tangible goods and to provide for their physical distribution." Longman, in his recent book entitled "Practical Distribution Cost Analysis" defines distribution costs as "all costs incurred after the goods have been made available for sale." Perhaps a more easily understood definition would be "all costs below the gross profit figure in the profit and loss statement."

Fundamentally, a manufacturing concern has two objectives; namely, production, and sale of production. Its producing costs are contained in the cost section above gross profit, and the costs of selling its production are contained below gross profit. Similarly, in the case of a wholesaler or retailer, his product costs appear above gross profit and his disposal costs are shown below gross profit. For the purpose of this article, then, distribution cost will be considered to be those costs shown on the profit and loss statement below gross profit.

Distribution Cost Analysis is a tool whose primary purpose is to aid management in the efficient performance of its marketing activities. The October 1955 issue of "Business Budgeting" contains an article by Stanley Z. Bronner in which budgeting is defined as "An orderly way of going about the everyday job of running our business and, more importantly, of concentrating the efforts of all of our management personnel productively, and enthusiastically, toward a common goal." Distribution Cost Analysis is an orderly way of going about the everyday job of running the marketing phase of a business and of concentrating the efforts of all management personnel toward the effective discharge of marketing obligations and efficient marketing costs.

Costs of distribution are incurred for the performance of certain functions – as selling, advertising, invoice preparation – which aid and secure the orderly transfers of title. Intelligent marketing must be based on a thorough grasp of marketing costs. Hence, the costs of the various functions of marketing must be thoroughly known. These can only be known if the various functional costs are determined, and such can accrue from functional distribution cost analysis. Functional distribution cost analysis means, in turn, that the natural expenses are to be analysed in terms of the functions for which the natural expenses are incurred. From this comes a clear concept of the cost of performing any given function.

Values of Distribution Cost Analysis

There are several values of Distribution Cost Analysis.

A). Costs and profits resulting from the sale of particular products or product lines may be computed. This permits management to know where to increase or decrease effort, and what lines to drop or expand. One manufacturer, employing distribution cost analysis, found that one of his products contributed a net loss equal to 104% of the company's net profit before taxes, while two other products produced a profit of 168% of the company's net before taxes. The loss item accounted for 52.5% of dollar volume, and 53.2% of physical volume, while the two profitable items contributed 125% of dollar volume and 12.1% of physical volume. Thus the greatest contribution to volume resulted in a net loss and the smallest volume contribution produced the greatest net profit. Hence, results bore an inverse ratio to efforts.

One wholesaler found, when his costs were functionalized, that 37.5% of his family product lines produced profits while 62.5% of his lines contributed losses.

B). Costs and profits resulting from sales to particular customers or classes of customers may be computed. This permits management to decide where to increase or decrease effort and to decide upon the customers who are to be dropped or to whom various degrees of attention will be given. In the case of the manufacturer cited above, sales to retailers constituted 38% of total volume and were made at a loss, while sales to wholesalers amounted to 62% of total volume and were made at a profit. An analysis of this nature may pose the vexing problem of what disposition is to be made of unprofitable accounts. The mere fact that a certain percentage of accounts may be found unprofitable does not necessarily mean that they should be dropped. Once the facts are determined, ways and means to improve customer profitability can be considered and definite action taken. One manufacturer found that 35% of his customers were sold at a loss. Through an adjustment of salesmen's calls, the manufacturer's net profit showed a $5 million improvement in one year.

C). Cost and profits resulting from various units of sale may be computed. This permits management to decide useful ways of avoiding loss orders, such as the imposition of realistic minimum billing figures on small orders.

D). Costs and profits resulting from the sales of products thru different channels may be computed. One food processor has recently discontinued its long-standing method of distributing direct to the retailer and is now selling only through wholesalers. This decision was not reached without a distribution cost analysis.

Helps Solve Peculiar Industry Problems

E). Distribution Cost Analysis permits management to compare different methods of solving problems, particularly peculiar industry problems. Some of these may be:

1. Should we rent or own delivery trucks?
2. How much automation should be applied to the warehouse?
3. Should we buy from a warehouse or direct from a mill?

Each industry has its own peculiar problems which can be solved if all costs are determined and properly organized.

(Continued on Page 15)

PROFIT CONTROL BY ANALYSIS OF OPERATING PROFIT VARIATION

By: Jos. Grimm, Jr.
Assistant Secretary-Treasurer, Solar Corporation, Milwaukee, Wisconsin

Has "Analysis of Expense Variation" overshadowed the true need for analysis of the one single objective. . .Profit? Perhaps the average Budget Director is approaching his analysis from the wrong side, instead of starting with the final result--Profits! Here's one authority who thinks this may be the case. . .with some suggestions you will be interested to read.

Most of the ammunition on budgeting covers phases other than analysis of profit variation. The heavy guns are trained on manufacturing budgets with their fixed and variable components, sales forecasting, capital expenditures, cash projection and long range planning.

Too much emphasis has been placed on the narrower concept of budgeting and its application to the manufacturing divisions. The constant attention given to expenses has, in the eyes of many, reduced budgeting to altogether too limited a field. Not nearly enough has been said or written on the intrinsic worth of budgeting as an aid to profit control. Herein lies the true and ultimate value of budgeting and the attainment of its broader aspect -- planning and control of profit. Those of us who are serving management must widen our perspective and perform the all important task of using the tools at our command for better profit planning and control.

'I am not attempting to minimize the importance of detailed sales forecasting and the establishment of budgets for all manufacturing and staff departments with the various comparative reports of actual performance against planned. To deny this would be refuting the planning and control concept of which I am a firm advocate. I think we will agree that the main objective of a corporate enterprise is the earning of a profit, not in a mercenary sense, but one consistent with the company's responsibility to its employees, customers and owners. If we are together on this point we should arrive at the logical conclusion that our responsibility is to assist management in planning the optimum profit and providing proper information so that this objective can be attained.

ANALYSIS OF RESULTS

While the planning phase is the first step and a necessary prerequisite before you can even enter a discussion on control, this article will be limited to the control aspect and with an approach of how best to analyze the period results so that management can be apprised of the external and internal inferences which are affecting the original plan.

Analysis of profit variation is the approach to control of profits and therefore is an invaluable tool for management. For the following reasons:

1. It highlights the items which are affecting operations.
2. It provides management with information which ordinarily would not come to its attention.
3. It steers their thinking from taking a casual glance at final consolidated results to the detail of each division.
4. It shows which units are contributing a larger share and those which are dragging.
5. It creates objective thinking and enables those in charge to ask the all important question – why the variance, how did it occur –– what can be done?

Profit analysis is particularly important where operations consist of several divisions or operating units. Consolidated presentations bury the facts. Counterbalancing influences will offset the bad against the good and can give management a false sense of security. It is important to break down the segments and make detailed analysis of actual results compared to budget. The value of such an analysis is particularly significant if budget forecasts are carried out on a monthly basis for the fiscal or calendar year.

ELEMENTS NEEDED FOR EVALUATION

In order to properly evaluate the profit variance, the following elements must be present:

1. Sound sales forecasts.
2. A standard cost system, or other costing method, which lends itself to budgeting cost of sales.
3. Divisional variable expense control.
4. An overall comprehensive budget program detailed through the operating profit forecast and down through final net profit.

Below, in Exhibit A, we have a typical approach to operating profit analysis. For purpose of simplification, we are analyzing only one segment of the business. The indentical approach can be used for each operating unit or product line and also on a consolidated basis for the entire business.

EXHIBIT A

COMPARATIVE OPERATING STATEMENT
THREE MONTH PERIOD ENDING
March 31, 19--

	BUDGET		ACTUAL		Comparison with budget over (under)
	Amount	%	%	Amount	
Net Sales	1,500,000	100.00	100.00	1,400,000	(100,000)
Cost of Sales	1,380,000	92.0	93.2	1,304,800	(75,200)
Gross Profit	120,000	8.0	6.8	95,200	(24,800)
Selling & G/A	45,000	3.0	3.1	43,400	(1,600)
Operating Profit	75,000	5.0	3.7	51,000	(23,200)

ANALYSIS OF OPERATING PROFIT VARIATION FROM BUDGET:

SALES EFFECT:		
$100,000 loss in sales volume at Projected profit of 5%		5,000
COST OF SALES EFFECT:		
Actual cost of Sales Ratio	93.2%	
Budget Cost of Sales Ratio	92.0%	
Unfavorable Cost of Sales Ratio	1.2%	
1.2% x 1,400,000 (Actual Sales)		16,800
SELLING AND G/A RATIO EFFECT:		
Actual Selling and G/A Ratio	3.1%	
Budget Selling and G/A Ratio	3.0%	
Unfavorable Ratio	.1%	
.1% x 1,400,000		1,400
TOTAL LOSS OF OPERATING PROFIT		23,200

It will be noted that net sales for the period under review fell short of forecast by $100,000 and operating profit was off $23,200. All too many times this is the end in budget presentation. Of infinitely more consequence is why did operations fall out of line with original objectives? A management which has this perspective is performing its primary function and you can pretty

1956 NATIONAL CONFERENCE COMMITTEE WORKING ON CONVENTION PROGRAM

The committee responsible for the 1956 National Conference program is shown here hard at work, in Cleveland. Mr. C. O. Wessman, general chairman, is at the head of the table, center. From left to right: Henry M. Leigh, program chairman; Wm. H. Fleming, advisor; Leonard G. Duetemeyer, registration, reception and hospitality; Mr. Wessman, general chairman; Russell O. Hegness, arrangements chairman; Melvin J. Nagel, finance chairman; Samuel S. Allender, publicity chairman; Thornton L. Thurber, president of the Cleveland Chapter. Not present when the photograph was taken was William E. Dohnal, special activities chairman. These men have been hard at work for weeks, and assisted by other members of the Cleveland Chapter, have about completed what they consider will be a bang-up program for the bigger-than-ever National Conference scheduled for May 23, 24 and 25 at the Hotel Cleveland, Cleveland, Ohio.

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well bet that such a company will get itself back on the original charted course instead of floundering around without ever getting the true answer.

REASON FOR PROFIT VARIANCE

To continue the explanation of our primary concern at the moment, the $23,200 operating profit variance was the result of three basic factors:

a. Sales
b. Cost of sales ratio
c. Selling and G/A ratio

Profits were forecasted at 5%, therefore a loss in sales volume of $100,000 had the effect of reducing projected profit $5,000. Cost of sales had an unfavorable ratio compared to budget of 1.2% and selling and administrative were .1% over budget. The unfavorable ratio of 1.3% of the latter two items applied to actual sales of $1,400,000 accounts for a further loss in operating profit of $18,200.

We will not concern ourselves here with the sales effect. At this point of our analysis, management is apprised of the impact which sales volume has imposed. This should set off meetings between management and the sales and/or marketing division to ferret out the reason for the sales decrease. Out of these meetings should come an analysis of product line, product mix, territorial performance and all the other facets which have a bearing on sales.

Let us dispose of the selling and general and administrative expense effect on operating profit so we can spend the balance of this treatise on the cost of sales variation. Assuming again, for the sake of simplicity that the expenses in these categories are fixed, the .1% of $1,400,000 or $1,400 is a net volume variance. A $100,000 loss of sales with a projected 3% selling and G/A cost represents volume effect of $3,000. Actual expense performance was favorable to the extent of $1,600 leaving a net unfavorable effect on operating profit of $1,400.

The next step in our analysis is to get behind the unfavorable cost of sales ratio of 1.2% which affected operating profit $16,800. Let us examine Exhibit B for this analysis.

ANALYSIS OF OPERATING PROFIT VARIANCE
THREE MONTH PERIOD ENDING
MARCH 31, 19--

			(Figures in parentheses are unfavorable)
Sales effect:			
$100,000 @ 5%			(5,000)
Selling and G/A:			
.1% of 1,400,000			(1,400)
Cost of Sales Effect:			
Material	(3,400)		
Labor	(600)		
Overhead	(14,600)		
Due to Activity	(27,700)		
Due to Performance	13,100		
Total Manufacturing Variation		(18,600)	
Less favorable effect of gross margin, product mix, etc.		1,800	
Total cost of sales variation			(16,800)
Total operating profit variation			(23,200)

From the above schedule, it will be noted that charges to cost of sales from manufacturing operations totaled $18,600.

(Please turn page)

TYPES OF VARIATION

The favorable offset from the effect of gross margin of $1,800 will be discussed later. The sum of $18,600 represents direct charges to cost of sales and can readily be determined by accounting for all variations from standard through the general ledger accounts. These would primarily be variations from standard or budgeted costs which are charged off during the period. The following is a brief summary of the types of variations which would arise. These are by no means intended to be all inclusive.

A. Material variations
   1. Under a standard cost system, material variations arise when actual costs exceed or are under standards.
   2. Variations arising from inventory adjustments, either an adjustment to physical or an adjustment to current market.
   3. Scrap adjustment
   4. Obsolescence losses
   5. Quantity usage
   6. Substitute material

B. Labor variations
   1. Actual exceeding or less than pre-determined standards.
   2. Changes in piece rates or work standards.
   3. Excessive scraps and other leaks.
   4. Excessive direct labor, i.e., direct labor removed from standard and temporarily on day work.
   5. Rework
   6. Improper accounting – either by error or improper segregation of direct and indirect labor.

C. Overhead variations
   1. Performance – the difference in actual expenses as related to budget and actual production level.
   2. Activity – that amount which comes from the rate of activity. The variation of overhead absorption at the actual level compared to budget anticipation.

As stated above, the variation figures for our analysis could readily be obtained from the books of account. The material and labor variation is $3,400 and $600 represent direct charges to cost of sales for the period. The amount charged off due to overhead must, of course, be predetermined. You will remember at the outset we said a comprehensive budget program must be in use and this assumes a forecast of production and the elements of projected direct labor and overhead from the manufecturing budget. Exhibit C is an example showing the development of the expense variation of $14,600 together with what amount is attributable to performance and activity. Space does not permit a further elaboration of all the detail involved, but the mechanics are quite simple when all the facets of good budgeting are available.

EXHIBIT C:

ANALYSIS OF MANUFACTURING OVERHEAD VARIATION

OVERHEAD VARIATION (Charged to Cost of Sales)

Overhead per actual		
Overhead expense	268,600	
Overhead absorption	212,000	
Underabsorption		(56,600)
Overhead per budget		
Budgeted expense	305,600	
Budgeted absorption	263,600	
Underabsorption		(42,000)
Underabsorbed overhead charged to Cost of Sales		(14,600)

* *

MASTER BUDGET FORECAST:

Direct Labor –	93,500			
Overhead:				
Fixed		210,400		
Variable	101.8%	95,200		
Total budgeted overhead		305,600		

BUDGETED EXPENSE – ACTUAL ACTIVITY

Direct labor –	70,000			
Overhead:				
Fixed		210,400		
Variable		71,300		
Total budget allowance		281,700		
Actual expense for period		268,600		
Favorable budget performance				13,100
Master Budgeted Overhead Absorption		263,600		
Actual Overhead Absorption		212,000		
Unfavorable overhead absorption			(51,600)	
Master budgeted overhead		305,600		
Budget allowance – actual activity		281,700		
Favorable budgeted expense			23,900	
Unfavorable overhead due to activity				(27,700)
Unfavorable expense variation				(14,600)

Just a brief word on the favorable effect from shift in margin, etc. Actually this figure is a residue of the difference between the total cost of sales variation ($16,800) and total manufacturing variation ($18,600). In other words, the variation from this source is reflected automatically through the process of analysis shown on exhibit B. We all can readily comprehend that within the actual sales volume there may be some favorable aspects such as would arise from a more favorable product and profit mix. Also, there may be the effect from changes in cost or selling price which have affected the profit percentage anticipated in the original budget. All this is still another step in the profit analysis and quite a comprehensive analysis can be made of this variation factor. If it is nominal, we know we are adhering to our course on product mix and gross margin. If the variance is of concern, then the so-called "library function" comes into play.

NET PROFIT ANALYSIS

Our discussion has been primarily concerned with the variations at the operating profit level, however, the analysis can and should be carried down to the final net profit with appropriate comments so that management can see the effect of such elements which lie between the operating and net profit figure. Exhibit D shows this final analysis.

	BUDGET	ACTUAL	COMPARISON WITH BUDGET OVER (under)
Operating Profit	75,000	51,800	(23,200)
Non-Operating Deduc	10,000	12,000	(2,000)
Non-Operating Inc.	15,000	20,000	5,000
Net Profit B/F Tax	80,000	59,800	(20,200)
Income Taxes	42,400	31,700	(10,700)
Net Profit	37,600	28,100	(9,500

(Continued on next page)

VALUE OF DISTRIBUTION COST ANALYSIS

(Continued from Page 11)

F). Distribution Cost Analysis provides management with an indication of the effect in profits caused by a change in the product mix or in the ratio of customers of certain types. This answers the question 'What would Happen if we sold more of product X and less of product Y?'

G). Distribution Cost Analysis, when carried out through the method of functional costing, will show how much expense is incurred for each activity of the business. This will quickly spotlight costs and will highlight areas of possible inefficiencies. One concern found its accounting costs were about three times the amount which could be considered normal. Often, and particularly in small concerns, functional costs become buried in several natural expense accounts and it becomes easy to lose sight of total costs of any one function. In the case of the concern cited in this paragraph, each natural expense served an average of almost 6 functions. One natural expense alone serviced 16 functions. Under such circumstances it is easy to underestimate actual functional costs.

H). Distribution Cost Analysis enables management to assign responsibility for costs to specific individuals, and to be able to measure undivided performance to assigned responsibility. If management assigns territorial cost responsibility to an individual, it can determine whether he has performed according to his responsibility when it employs distribution cost analysis.

Foundation of Standard Cost

I). Distribution Cost Analysis is the foundation for the development of standard costs. There is no inherent reason why standard costs of distribution cannot be prepared. It is quite true that production costs lend themselves more readily to standardization than do distribution costs, since production costs arise from the treatment of inanimate objects within controlled space, while this condition is not always true for distribution costs. Nevertheless, many of the distributive functions are based largely on repetitive action, and this can be subjected to standardization. Least subject to standard costs are the salesmen; yet standards within limits of variation can usually be set for them.

PROFIT CONTROL BY ANALYSIS OF OPERATING PROFIT VARIATION

(Continued from preceding page)

In conclusion, as can be seen from the preceding discussion, the job is first to present the factors which have affected our profit goal and then to make a comprehensive study getting behind the bare figures. As was implied at the outset, most budget people limit their field to manufacturing budget performance, the reports to foremen, and staff meetings analyzing the month expense performance, material variation reports and daily labor performance. While this is all essential, the important thing, as I see it, is an analysis of the total contribution or subtraction from operating profit as a result of sales, cost of sale, selling and G/A and shift in margin. The analysis and breakdown of the elements of variation are important for management to know. Explanation must be made of the veering from original charted course – something has happened and we must point out why. Analysis of operating profit variation is the tool for better profit planning and control.

J). Distribution Cost Analysis provides management with at least a rough estimate of costs and profits for proposed new products or customer classes. It thus gives some idea of what to expect when new products and customers are added, and can serve to warn of possible disastrous results, or to indicate possible profit results.

K). Distribution Cost Analysis provides management with a new and detailed understanding of its marketing structure, and thus forces a review of basic marketing plans and working organization. Management realizes only too well that operations become grooved, and that in some cases carelessness creeps in. A detailed cost analysis will put marketing and the organization in blueprint form so that management can take a fresh look at them.

L). Distribution Cost Analysis, especially when standard costs are set, will provide management with the opportunity to prepare better budgets. Quite obviously, the accent on highly competitive economy and the continuous rise of marketing costs indicate the need of better control and better distribution. What better place to start than in budget preparation? But effective budgeting of these costs must be based on functional cost analysis.

M). Distribution Cost Analysis will provide management with a valuable sense of having a through grasp of its operating costs. The only way for management to control costs is to have a complete knowledge of them. The management which can thoroughly know its marketing costs is in the best position to do a sound marketing job. Confidence is one of management's greatest assets - it is a characteristic of leadership. Confidence is based on knowledge and a very much needed area of knowledge is that of distribution costs.

N). As a social force the widespread use of distribution cost analysis has very significant implications. The major benefit would be an increase in the general level of marketing efficiency. Competition would in the long run transfer some of these gains to the consuming public through lower prices. This would be similar to other technological advances, those results generally are shared by the public as a whole.

In summary, distribution cost analysis is a most valuable aid to management because it enables management to have a through grasp of its marketing costs. It permits management to measure its efforts through preparation of such statements as profit-line profitability, customer and/or territorial profitability, and unit of sale profitability.

CHICAGO CHAPTER NOW TOTALS 75

Membership certificates have been issued to two new members of the Chicago Chapter, bringing that chapter's membership to 75 this year, the largest number of members for any one chapter in N.S.B.B.'s brief history. The two new members are:

Mr. Ralph K. Brakke, Associate Professor of Accounting, School of Commerce, Northwestern University; Mr. Pierre V. Maltby, Treasurer of Moline Malleable Iron Co., St. Charles Illinois.

Mr. Brakke lives in Milwaukee, teaches in Evanston, and now belongs to the Chicago Chapter. Looks like Chicago might have snatched a member from the Milwaukee group!

CAPITAL EQUIPMENT REPLACEMENT POLICY

(Continued from Page 8)

The problem in this example, which confronted the material handling department, was whether or not to replace four existing units of material handling equipment, including 3 electric trucks and 1 gasoline truck with 2 new electrically-driven trucks and 1 new gasoline-driven truck.

Basic data, concerning the proposed and existing equipment, appears on the upper third of the replacement analysis form, (exhibit I). On line 6, at the left, the estimated primary service life of the proposed equipment is indicated in this instance, 10 years. Terminal salvage value is estimated at $1,500, and the total cost of the equipment, $26,100. The terminal salvage factor, which is the salvage value divided by the total cost, is 6 per cent.

PRESENT METHOD

The 4 Transport Trucks have a platform Lift Mechanism which restricts their use to skids only. At present none of our transport trucks having a Fork Lift Mechanism for handling palletized material can go into No. 1 Tractor Building due to it's Low Floor Load Limit. The palletized material must be left at the door and then be reloaded onto skids so that the hand transporter's or the Driven Trucks equipped for Platform Loading only can take it into the building.

Each of the 4 Trucks operate 2 shifts.

8 Men x 8 Hrs. x $1.61 Per Hr. x 250 Days	$25,760.00
1st Shift Fringe Benefits	1,384.08
2nd Shift Fringe Benefits	1,868.50
Yearly Direct Labor	$29,012.58
Cost of rebuilding each Electric Truck	$ 4,375.00
	x 3
	$13,125.00
Cost of Rebuilding 1 Gas Truck	$ 5,575.00
TOTAL COST	$18,700.00

PROPOSED METHOD:

Purchase 1 - 6000 Lb. Capacity Gas Driven Pneumatic Tired Fork Truck for Outside work.

1 - 4000 Lb. Capacity Electric Driven Fork Truck for General Purpose Inside Work.

1 - 2000 Lb. Capacity Electric Driven Fork Truck for General Purpose Inside Work and also to move material into No. 1 Tractor without Reloading for Smaller Trucks.

Each of 3 Trucks will operate 2 shifts.

6 Men x 8 Hrs. x $1.61 Per Hr. x 250 Days	$19,320.00
1st Shift Fringe Benefits	1,038.06
2nd Shift Fringe Benefits	1,401.38
Yearly Direct Labor	$21,759.44

EXHIBIT II

Pertinent data, concerning the existing trucks, is shown to the right of the foregoing information, and you will observe that these units averaged 16 years of useful life and originally cost $11,250. They had no resale, salvage, or conversion value.

With this basic data, we are prepared to develop the factors for application of the MAPI formula, which effectively provides a measure of the cost of not replacing capital equipment.

In exhibit II, the present and proposed methods of handling the material in question are detailed. You will notice that annual direct labor to operate the existing units was approximately $29,000; whereas, the estimated direct labor to operate the proposed equipment was $21,700, because fewer operators were required. Further, it was estimated that it would cost $18,700 to rebuild the existing equipment.

You will observe that the estimated direct labor for proposed and existing equipment is indicated on line 10. The factors, detailed on lines 11 through 17, were not pertinent in this particular analysis; however, in most studies the majority of these items must be taken into consideration.

On line 18, we find that property taxes and insurance expenses were greater for the new equipment. According to the data, recorded on line 19, normal maintenance was expected to be the same for both the proposed and existing equipment. Again, the factors, detailed on lines 20 through 22, were not pertinent. On line 24, the factors for the proposed and existing equipment was summarized, and on line 26, the variance in operating cost for the next year is determined by obtaining the difference in the total of all factors for the proposed and existing equipment, and in this case was over $7,000.

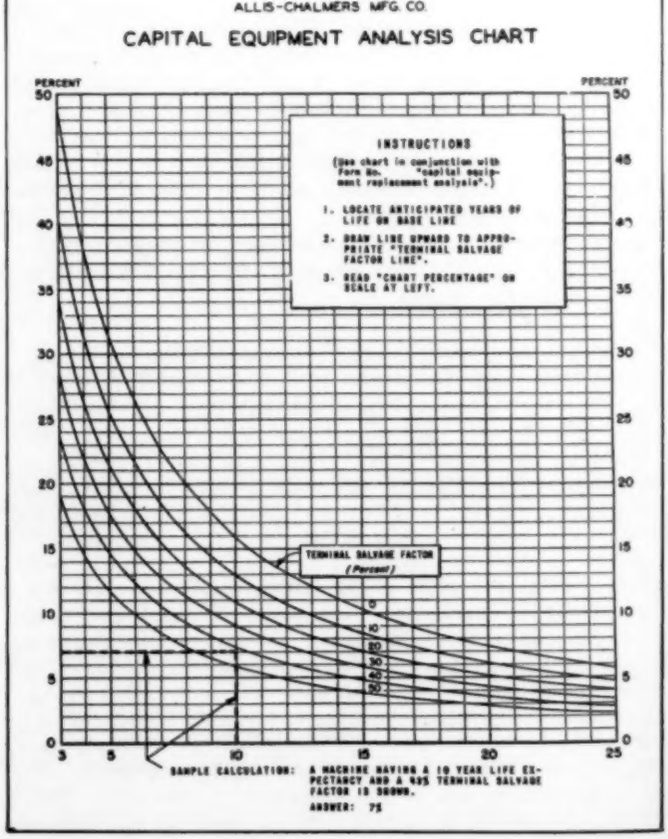
EXHIBIT III
ALLIS-CHALMERS MFG. CO.
CAPITAL EQUIPMENT ANALYSIS CHART
PERCENT
INSTRUCTIONS
1. LOCATE ANTICIPATED YEARS OF LIFE ON BASE LINE
2. DRAW LINE UPWARD TO APPROPRIATE "TERMINAL SALVAGE FACTOR LINE".
3. READ "CHART PERCENTAGE" ON SCALE AT LEFT.
TERMINAL SALVAGE FACTOR (Percent)
SAMPLE CALCULATION:
ANSWER: 7%

(Continued on next page)

(Continued from previous page)

Next, a calculation is made to determine the next year's capital cost of retaining existing equipment. When it is necessary to spend a considerable sum of money to restore existing equipment so that its life is prolonged for more than one year, this expenditure is considered as restorative repairs. The total cost of the repairs is divided by the number of years of prolonged life and the result, plus 6 per cent of the total cost of repairs, is considered the restorative repair cost for one year. The rate of 6 per cent has been established as the required rate of return on invested capital. In this case, the cost of restorative repairs was $4,862.

Because the existing equipment had no resale, salvage, or conversion value, there was no estimate of salvage loss for the next year.

The total cost for existing equipment for the next year was determined by adding together the next year's variance in operating cost and restorative repairs and amounted to $11,965. To determine the next year's cost for proposed equipment, please refer to the capital equipment analysis chart. This chart reduces to graph form the factors included in the algebraic MAPI formula, which included factors for acquisition cost, estimated service life, terminal salvage, etc. On the base line of the chart, the estimated years of service life are indicated. In our case, the estimated primary service life was 10 years and the terminal salvage value factor, 6 per cent; therefore, extending vertically at 10 years to a point where the terminal salvage factor curve of 6 per cent (between 0 and 10%) is intercepted, and then horizontally, we find a resultant factor of 14 per cent. Quoting directly from the MAPI text, this result is known as the adverse minimum and may be defined as the lowest time-adjusted annual average of operating inferiority and capital cost obtainable from the proposed equipment. To this is added an interest factor of 6 per cent for rate of return on invested capital, which results in a total of 20 per cent. On line 32 the total installed cost of $26,100 from line 8 on the form multiplied by 20 per cent gives a result of $5,220, which is the next year's cost of the proposed equipment.

CHANNEL OF APPROVALS

The difference in next year's cost for the proposed and existing equipment is indicated on line 33, and, in this particular instance, the acquisition of new equipment rather than rebuilding existing equipment resulted in a first year's economic gain of $6,745. Needless to say, the new equipment was purchased. When the analysis has proven the need for the new equipment, a copy of the analysis is attached to an appropriation. An appropriation (whether for new or replacement equipment), is required for all asset expenditures of $2500 or over. These are approved by the executives in charge of the Division; the Comptroller; the Executive Vice President; and the President, and those over certain limits are referred to the Board of Directors.

In our opinion, no formula can solve all of our problems, but experiences to date, although still limited at this point, have been most satisfactory as proven by some postaudits which have been completed.

WE ARE DISCOVERED!

"Management Planning & Control", published by the Controllership Foundation, Inc., has discovered N.S.B.B., and has requested information so that "Business Budgeting" material can be listed in the bibliography supplement of their publication.

STANDARD FOR BALANCE SHEET ACCOUNTS

(Continued from Page 10)

Discussions of Raw Material Inventories led to listing of reasons that might cause standby to be reflected in this account. Sometimes a company has a policy of purchasing slow moving raw material in quantity in order to get a low unit price. Here too, there is a common practice of keeping a minimum quantity of fast moving stock on hand so that machines can be kept in operation even though delivery schedules of suppliers are not met. Conservative estimates of lead time, conceivably, too could lead to standby showing up in the plotting of raw material inventories.

Many of the factors that have been cited, it was believed, could also be expected to result in an element of standby for even Supply Inventories held "in Stores".

CHARTING

Many hours were spent in rationalizing and exploring the apparent soundness of the hypothesis. It was recognized, however, that this activity would be fruitless unless actual plotting was done to prove or disprove the assumption. Cases have been found where the plotting tends to confirm the viewpoint that an element of standby exists in some balance sheet accounts. Cases have been found where "the line" apparently should be drawn through zero —— in other words, there is no standby exhibited in the particular chart. A surprising point to some members of the committee has been the discovery of a few cases in which a "negative standby" had been indicated.

The majority of examples plotted have dealt with annual figures. It is the intention of the committee to explore the actual conditions found when monthly data are studied.

Two charts are shown that illustrate the presence of standby. The trend lines reflect a constant plus a fixed percentage of sales.

The chart on "Cash" indicates three trend lines. The higher line indicates the "average" situation for this company which has been expanding and has been accumulating cash to finance the expansion. The middle line indicates the Cash which might have been required for "comfortable" operations without consideration being given to abnormal conditions. The bottom line indicates the probable minimum cash that should have been on hand -- actual cash below this line probably would have created a financing problem.

The chart on "Inventories" covers a period of years. Many of the low points are war years and illustrate the changes that can come with a change in a product line. However, it is interesting to note that the pre-war and post-war years apparently have a relationship in common.

COMMITTEE VIEWPOINT

The committee does not intend to develop tables of "standards" for individual balance sheet accounts. It is interested in exploring the possibility of developing a method that could be used to improve interpretation of a particular balance sheet -- a method that might lead to indicating possibilities for the more efficient use of the capital funds available to a particular management -- a method that would be helpful in developing and appraising long range company programs.

The committee intends to examine the similarities and the differences between month-to-month budgeting for balance sheet accounts. In other words, are the short-term and long-term problems of balance sheet budgeting the same or different?

OPERATION RESEARCH AS APPLIED TO MODERN BUSINESS USE

By: D. H. Schiller
Partner, Caywood-Schiller Associates, Chicago, Illinois

An entirely new development, "Operations Research" has advanced from a strictly war-time armed services function, to a place of importance in modern-day business management. If this field has seemed a mystery to you, here's a chance to find out just what it is, how it operates, and why you as a budget specialist may want to learn more about it.

OPERATIONS RESEARCH, as now applied to modern business, is an outgrowth of activities on behalf of the armed services in the Second World War. Small teams of professional people -- mathematicians, physicists, economists, chemists, statisticians, astronomers, etc. -- were attached to the staffs of senior officers in order that their specialized backgrounds could be brought to bear on operational and logistical problems. Their assistance proved sufficiently valuable that the armed services, both in this country and abroad, now maintain permanent operations research groups -- for example, the Weapons Systems Evaluation Group (Office of the Secretary of Defense), the Operations Analysis Section (U.S. Air Force), the Operations Research Office (U.S. Army), the Operations Evaluation Group (U.S. Navy), etc.

In the past decade, impetus has grown for the application of the professional team technique to the problems created by the complexities of modern business operations. The rapid development of electronic high-speed computation machinery has contributed importantly to this movement, for it is the capability of handling large masses of computations quickly and accurately that makes practical the application of the methods of the physical sciences in the business environment.

Characteristically, the problems which invite OPERATIONS RESEARCH are those which have a complicated structure with many variable factors -- the factors being interrelated in such a way that it would be difficult to develop a solution on the basis of experience or by cut-and-try methods. The OPERATIONS RESEARCH approach to such problems is unique in that it begins by constructing a mathematical representation of the process which has generated the problem. Once this mathematical model has been devised, the analysts are enabled to apply mathematical techniques to the solution of the operational problem --, and, if necessary, can stimulate the operation in a rapid and repetitive fashion on high-speed computing machinery. Illustrative of OPERATION RESEARCH studies which have been made are the following two examples:

Example 1

A department store chain planned to substitute a single centralized warehouse for an existing system of separate warehouses. There existed the problem of providing docking, unloading, and conveying facilities for the new warehouse. The extent of new facilities to be provided would have to take into account the change in traffic flows under the new system, the concurrent opening of several new stores, the replacement of rail deliveries by truck deliveries, etc.

This situation was one receptive to OPERATIONS RESEARCH. The problem involved was basically of a waiting line type, in which the costs and inconveniences of waiting for service (in this case, a line of delayed trucks waiting in a public alley and street) had to be balanced against the costs of constructing and maintaining additional service facilities. A waiting line of trucks clearly involved out-of-pocket costs to the company -- the trucks being in part hired by the company on a daily basis to provide warehouse-to-store deliveries. Furthermore, a conspicuous property of the problem was the absence of traffic arrival scheduling -- and the apparent impracticality of enforcing such scheduling.

"OPERATIONS RESEARCH" – A DEFINITION

OPERATIONS RESEARCH is a professional field developed in the last decade to assist managers in dealing with problems created by the complexities of modern business operations.

The tools of OPERATIONS RESEARCH are advanced mathematics and high-speed computing machines; the subject materials applied in OPERATIONS RESEARCH are those of mathematical statistics, probability theory, economics, mathematical physics, and various branches of engineering.

The problems for OPERATIONS RESEARCH are ones which have a complicated structure of many variable factors -- problems for which it is difficult to obtain a solution solely from experience or cut-and-try methods, or to determine if a solution suggested by experience can be significantly improved.

The utility of OPERATIONS RESEARCH has been demonstrated by its successful application to a variety of problems of business organizations.

As the examples in this article show, these applications may range from problems involving only a subordinate internal company activity (such as the unloading into warehouse storage of a department store chain) to problems concerning a company's major production function (such as optimizing the ingredient mixing formulae of a commercial food manufacturer).

As an OPERATIONS RESEARCH study, the solution of the problem required the following principal steps:

1. A field survey was conducted to determine the quantitative character of the existing warehouse arrival traffic, the warehouse servicing performance, and the cubage of merchandised delivered. A punch-card data analysis was performed on the information collected by the survey.

2. On the basis of the quantitative picture of the current warehouse operations, it was found that mathematical models could be constructed to represent the arrival traffic, the servicing functions, the merchandise accumulation, etc.

3. The mathematical models were then modified to account for seasonal effects and for the circumstances to be changed for the warehouse system under planning.

4. The mathematical representation of the new warehouse operations permitted the latter to be simulated by the use of high-speed electronic computing machines. Since one day of warehouse operation could be simulated in five minutes of computing machine time, it was possible to study the effect of changing the extent of the warehouse facilities within broad limits.

5. As a result of the OPERATIONS RESEARCH study, the management was presented with results which provided the frequency and extent of congestion that would occur as a result of the alternative decisions which could be made on warehouse service facilities.

In this instance, the management provided its own application of cost information to reach a final basis for decision. In other circumstances, the economic analysis might well be an integral part of the OPERATIONS RESEARCH study.

Example 2

Commercial food preparations are frequently sold with a guarantee that minimum daily requirements of various dietary elements (e.g. protein, calcium, vitamin A, riboflavin, etc.) are provided. The required amounts of dietary elements can be obtained by an unlimited number of alternative mixes of food components such as corn, wheat, meat scraps, soy beans, and others. These mixes, however, are produced at different costs -- so that there is generally one mix which both meets the dietary requirements and is the cheapest to produce.

A company producing food preparations became concerned over the following circumstances:

1. Its food mixing formulae were prepared on the basis of the experience of a few top-level personnel.

2. Since the costs of the food components were subject to frequent price fluctuation, the food mixing formulae required constant revision. This made undesirable demands on the time of the most experienced personnel.

3. Although the food mixing formulae were believed to be economical, there was no assurance that the method by which they were constructed always produced the least cost mixes satisfying the dietary requirements.

This food mixing problem belongs to a branch of OPERATIONS RESEARCH known as LINEAR PROGRAMMING. Typically, LINEAR PROGRAMMING deals with problems in which cost must be minimized, or profit maximized, at the same time that numerous constraints on the factors of the problem are met. Practical situations generally give rise to problems having a large number of variable factors -- as well as many constraints; for this reason, LINEAR PROGRAMMING studies often require the employment of high-speed computing machines.

An OPERATIONS RESEARCH study of this company's food mixing problem consisted of the following actions:

1. The problem was set up in LINEAR PROGRAMMING form.

2. A suitable high-speed computer was selected for continuing use, and the food mixing problem was "coded" for that machine.

3. Company personnel were trained to run the analysis on the high-speed computer.

Under the new system, it was possible to obtain each full set of several hundred formulae required for all company plants in a few hours of machine running time. Furthermore, these formulae were assured always to be the least cost mixes that would fill the dietary requirements. The preparation of a reference handbook giving the appropriate least cost mix for each change in the cost of the food ingredients was made feasible.

Additional applications of OPERATIONS RESEARCH which have been made in government and business areas are shown in the following list:

Gasoline Blending	Inventory Control
Traffic Control	Labor Utilization
Accounting Control	Equipment Replacement
Assembly Line Scheduling	Utility Dispatching
Quality Control	Strip Mining
Accident Control	Storage Water Control
Forest Resources Management	Crop Harvesting
Fisheries Management	Sales Promotion Evaluation

Some firms in this country -- in the aircraft manufacturing and transportation fields, especially -- maintain an operations research team on a permanent basis in their company. More frequently, the services of operations research consultants are employed by companies when the need arises.

SEVERAL CITIES IN THE RACE TO BE THE NEXT TO HAVE NSBB CHAPTER

Organization plans underway in Detroit, Evansville, and on West Coast

Mr. Hal C. Mason, hard-working chairman of the Membership & Chapter Formation committee of the national body, N.S.B.B., recently submitted a very favorable report to president E. G. Mauck and members of the National Board, regarding his activities in the field.

Mr. Mason, who is with the S. C. Johnson & Son, Inc., Racine Wisconsin, has traveled "from coast to coast" in the interest of N.S.B.B. chapter formation, and reported the following progress:

1) While in Los Angeles recently, he met with a group of five men from Los Angeles, San Diego and San Francisco, and the possibilities for one or more chapters in these California cities looks "good". Ross Stevens, a member-at-large and west coast chapter formation chairman, is from San Diego, and is spearheading organization plans in that city. Mr. Max Lorimore, comptroller of the Union Oil Company of American, Los Angeles, indicated sufficient interest to warrent further meetings there regarding formation of a chapter; Art Moor, San Francisco, is sending out letters to prospective members in San Francisco. All-in-all, Hal says "the Pacific Coast effort is coming along very well".

2) Detroit is likely to be our next Chapter city, if efforts being carried along by Mr. A. A. Kasper,Division Controller, Square D Company, bear fruit. Hal Mason, along with midwest chapter formation chairman E. E. Yount, expect to receive word of an organization meeting in Detroit at any time.

3) Evansville, Indiana is in the running, too. Mr. Mason has heard from Mr. Martin F. Matz, who says that a few men have talked over the possibility of forming a chapter there, and there is considerable interest.

Mr. Mason, and others on the Chapter Formation committee, expect to have further favorable reports, including actual word of new chapter formation, in the near future.

CHAPTER NEWS

GLEANED FROM CHAPTER NEWSLETTERS

TRI-CITIES CHAPTER. The Moline-Rock Island-Davenport group, our newest chartered chapter, enjoyed a discussion on "Preparation of Revenue Portion of the operating Budget", with Mr. Neil F. Dennen, at their January meeting. Mr. Dennen is Budget Analyst for the Iowa-Illinois Gas & Electric Company. This chapter is really moving along, and anticipates a steady growth in its first year.

LOUISVILLE. Charlie Manteuffel has succeeded Don Hall as president, as Mr. Hall has been transferred to Greensboro, North Carolina, where he continues as member-at-large. Mr. Manteuffel is Budget Director and Statistician for the Jefferson Island Salt Company, Louisville. He is a native of Louisville and a product of Louisville schools. Each year the Jefferson Island president selects a "Man of the Year"--in 1955, Mr. Manteuffel was selected for this award. The President said in making the award: "He has the happy faculty of being able to make known the results of all of his figures in such a way that the Sales Department and the Company Management can understand and even enjoy studying what would normally be very dry statistics. Because of his ideas, his ready information, his helpful attitude, and because of his continuous contribution to our overall effort, we name Charlie as a "Man of the Year". Congratulation, Charlie!

NORTH JERSEY. The Northern New Jersey Chapter came out with a compelling new Newsletter heading. Their January meeting was attended by 60% of the membership and ten guests, to hear a talk on "Installation and Maintenance of Budgetary Control System" by Mr. Wilson Seney of McKinsey and Company. At the January meeting two new members were welcomed, bringing the chapter membership to 27--Mr. Haldor G. Shields, assistant controller for the Federal Telephone & Radio Co.; and Mr. H. Richard Wienke, supervisor of operations Analysis, Curtiss-Wright Corporation. The February meeting, on the 2nd, scheduled a talk on The Industrial Psychologist, by Dr. Robert B. Garber

CLEVELAND. It's hard for this chapter to talk about anything except the big 1956 National Conference scheduled for Cleveland on May 24-25. Every member is "beating the drum", under the chairmanship of Carl O. Wessman, and the 1956 affair should be a humdinger. All members are working hard, on various committees.

CINCINNATI. A meeting at which each member brings as guest a University student interested in budgeting and accounting, is planned for February. Members of the Chapter will present a disucssion on budgeting as a career. The January meeting featured a talk on "Long Range Forecasting for Profit Planning" by Mr. W. H. Zimmer, vice-president for the Cincinnati Gas & Electric Company.

TWIN CITIES. A panel discussion on "Techniques in Budget Follow Up", with four members as leaders, featured the January meeting. The leaders were W. E. Dwyer, C. W. Jones, J. W. Malone and A. Rudell.

NEW YORK, Mr. A. M. Hartogensis of Ebasco Services Inc., addressed the chapter in January on the subject "The Influence of Automation on Budgets". Needless to say, this subject proved highly interesting. The chapter has added three more members--W. R. Fish, United States Rubber Co.; R. J. McKinley, U. S. Industries; and Wm. J. Wright, Johns-Manville Corporation.

BRIDGEPORT. "Expense Reduction Methods", with Mr. Henry F. Kalweit of the Dictaphone Corporation as discussion leader, featured the January meeting program.

INDIANAPOLIS. A panel discussion, led by the Messrs. Miller, Bubul, Hagel and Clark on the subject "Pricing in a Competitive Economy", was the schedule for the February meeting, on the seventh. The chapter recently welcomed two new members--A. G. Dirks and R. A. Means, both of Allison division. The two newest additions, Dave M. Roberts, Indiana Farm Bureau, and R. H. Kerley, Allstate Insurance Co., bring the chapter membership to 37.

CHICAGO. Mr. A. S. Hudson, assistant comptroller of Chrysler Corporation, spoke at the January meeting on the topic "Decentralization of the Comptroller's Function".

ST LOUIS AREA. "Budgeting at Ralston Purian Company", was presented at the January meeting by Mr. Carl M. Bacon, manager of the budget division of the company, and a charter member of the St. Louis chapter. The chapter welcomed five guests at their December meeting and one of them applied for membership--Mr. Russel F. Rose, Emerson Electric Manufacturing Company. Mr. Vincent Zoff, chief accountant, Airtherm Manufacturing Company, has also joined the group.

PHILADELPHIA. Expectations for 1956 was the topic discussed at the January meeting, following a practice of many years, at which members presented their forecast of business conditions. The new members welcomed into this chapter in recent months include: Ralph Bartlett, Triangle Publications; Joseph S. Hiles, Lukens Steel Co.; Wesley A. Konover, Vulcanized Rubber & Plastic Co.; Rudyard Uzzell, Foote Mineral Co.; Kenneth T. Delvalle, Campbell Soup Co,; Lewis A. Mortorano, Lyban Ross Bros. & Montgomery; George W. Jackson, Electric Storage Battery Co.

MILWAUKEE CHAPTER MEETS THE DEADLINE!

This issue of Business Budgeting, the third of the 1955-1956 fiscal society year, presents contributions secured by the Milwaukee Chapter, under the direction of Mr. J. C. Schraa, chairman, Mr. Schraa, who is with the Safway Steel Products Inc., Milwaukee, did such a good job that this issue could not contain all of the material provided, so there will be more from the Milwaukee group in later issues. The editors are especially appreciative of the fine cooperation of Mr. Schraa, his committee and the officers and members of the Milwaukee Chapter, for their fine work in behalf of the Society's national publication. We hope that other chapters will take a cue from Milwaukee, as their turn for contributions rolls around.

WE STAND CORRECTED!

In our last issue announcement was made of the results of a Newsletter heading contest, giving credit to Milwaukee Chapter for a Newsletter head that, it turns out, was actually developed by Larry Haverkamp, Cincinnati Chapter, when he was chairman of that committee last year. We apologize to Larry for giving someone else credit for his brainchild, and congratulate Milwaukee for recognizing a good heading when they see one.

NEW MEMBERS

National Secretary R. V. Millar has been busy in the last few weeks issuing membership certificates to new members of the various chapters, and to quite a few members-at-large. Here are the names of some who we welcome to membership in N.S.B.B.;

Wm. S. Kuhn, Food Machinery & Chemical Corp., San Jose, California.
Frank Rader, Director of Statistical and Budget Department, Southern Union Gas Company, Dallas, Texas;
Sebert Schneider, International Salt Co., Inc., Scranton, Pennsylvania.
Fred C. King, Budget Director, Danley Machine Specialties, Chicago, Ills.
Calvin G. Bauer, senior Accountant, Arthur Andersen & Co., Dallas, Texas;
C. H. Jankowski, Supervisor of Budgets, Bell Aircraft Corp., Ft. Worth, Taxas;
James W. Murphy, the Weatherhead Company, Cleveland, Ohio;
Earl G. Smith, Supervisor of Sales Budgets, Marketing Division, Marathon Corp., Menash, Wisconsin;
Shardlow E. Crawford, Assistant to Controller, Vanadium Corp. of America, New York;
Roy H. Newhouse, Assistant to Treasurer, A. S. Beck Shoe Corp., New York;
Edmund Klein, Assistant to Treasurer, A. S. Beck Shoe Corp., New York;
Bertrand M. Brewster, Superintendent Planning & Controls, Olin Mathieson Chemical Corp., East Alton Ills.;
Richard M. Savre, Controller, Nutting Truck & Caster Co., Fairbault, Minn.;
H. S. Gray, Budget Director, Western Air Lines, Los Angeles, Calif.;
Verna LeBlond, Budget Director, White Cap Co., Chicago Illinois;
Walter P. Weber, Supervisor Budgetary Control, Bell & Howell Co., Chicago, Ill.;
Wm. D. Wilder, Industrial Engineer, Williamson Heater Co., Cincinnati, Ohio;
Lawrence W. Gatto, Secretary-Controller, Billboard Publishing Co., Cincinnati;
Wm. J. Welch, Senior Cost Accountant, Mosler Safe Co., Hamilton, Ohio;
Edwin C. Albrecht, C.P.A., Cincinnati, Ohio;
Boyd E. Mapstone, Controller, Fawick Airflex Corp., Cleveland, Ohio;
E. C. Brock, Budget Coordinator, Girdler Co., Louisville, Ky.

In our last issue of "Business Budgeting" we pointed out that Miss Amber Henton, Louisville, was the only female member of the N.S.B.B. Now comes secretary Vissch Millar to point out that there are THREE (count 'em) gorgeous gals in the Society: Miss Henton, Naval Ordnance Plant, Louisville; Miss Verna LeBlond, White Cap Co., Chicago; and Miss Verda Branch, James Leck Company, Minneapolis, Minn. The N.S.B.B. is getting better all the time!

CITY MANAGER JOINS N.S.B.B.

The new Tri-Cities Chapter has enrolled as a member Mr. Cornelius Bodine Jr., who is City Manager of the City of Rock Island, Illinois. He receives his copy of Business Budgeting at his office in the City Hall. Mr. Bodine is the first City Manager to become a member of any N.S.B.B. Chapter.

PERSONALS

FORMATION MEETING FOR ANOTHER N.S.B.B. CHAPTER HELD IN CENTRAL OHIO

Mr. Earl E. Long, treasurer, Wooster Division Borg-Warner Corporation, recently notified Mr. E. E. Yount, Midwest Chapter Formation chairman, that he had interested a group of budget executives in the area of Mansfield, Wooster, Canton and Alliance Ohio, in formation of a chapter of the National Society for Business Budgeting, and that a discussion meeting had been scheduled for late January.

Mr. Long indicated that there is a large number of industries in that general area, and that he had interested at least ten men in the project. We hope to continue to receive favorable news from this group, leading to the organization of a new chapter there.

MEMBERSHIP SLIDING UPWARD!

The latest report on membership from National Secretary Vissch Millar, reveals our rolls are now graced by 573 (count 'em!) members, an increase of ten in the past month. This a good start towards the Society's next goal of 1,000 members.

SPEAKS IN LOUISVILLE

W. D. McGuire, N.S.B.B. Vice-President, came down from Neenah, Wisconsin to address the Louisville Chapter of the National Association of Cost Accountants, in mid-January. His topic was "The Broader Aspects of Budgeting".

N.S.B.B. GOES INTERNATIONAL!

Did you know that N.S.B.B. is operating on an international basis? A note from Sidney Knight, who last summer accepted an assignment to the United States Operating Mission to Iraq, American Embassy, Baghdad, Iraq, acknowledged receipt of his copy of the October Business Budgeting magazine, and also extends greetings to all his N.S.B.B. friends. Sidney is now a member-at-large with a leave of absence from New York chapter. He played a major role in forming the Northern New Jersey chapter; we would not be surprised if he formed one in Iraq! Good luck and best wishes to you Sidney--we would be pleased to receive some stories of your foreign assignment.

While we are on the subject of international relations, what happened to our good friend George Westby--the last heard he was digging for something in the mines of Peru.

BUDGET MEN ASSIST IN TEACHING GRADUATE CLASS IN "BUSINESS BUDGETING"

A group of N.S.B.B. members recently assisted R. V. Millar, our National Secretary and instructor to a graduate class in "Business Budgeting" at Drexel Institute, Philadelphia. Mr. Millar appealed for assistance, in presenting a panel on the topic of differences in approach to budgeting problems.

Assisting in the project were Ralph Bartlett, of Triangle Publications; R. W. Lobb, Philadelphia Gas Works; Wm. S. Rollins, Allstate Insurance Co.; and Wm. E. Holloway Jr., Curtis Publishing Company.

NAMED BUDGET MANAGER

Mr. Walter R. Bunge has been appointed Budget Manager in the comptroller's Department of Inland Steel Company, Chicago, a new post.

Walt is past national president (1951-52) of N.S.B.B., and presently a member of the Milwaukee Chapter.

BUSINESS BUDGETING AT SCHOOL

"Business Budgeting" magazine can now be found in the University of Illinois library, Urbana, Illinois. The school requested a copy of the Society's Annals, but since the publication was discontinued in favor of a bigger and better magazine, copies of Business Budgeting have been forwarded by secretary Vissch Millar.

NEW MEMBER FROM CANADA

Mr. T. P. Boyle, of the Canadian Chemical & Cellulose Co. Ltd., Montreal, Quebec, Canada, has become a member-at-large of N.S.B.B. Mr. Boyle becomes the first "foreign" member of the N.S.B.B., making our organization truly international. Mr. Boyle has indicated the possibility of attending the May National Conference in Cleveland. See you there!

WELCOME, MORE NEW MEMBERS!

Membership in N.S.B.B. is increasing faster than our news columns can report. Here are some new additions, as reported by National Secretary Vissch Millar:

W.S.Comstock, Budget Director, Chicago Transit Authority, Chicago.

Marion C. English, Assistant Comptroller, the First National Bank of Chicago.

William J. Kuck, Bridgeport Brass Co., Stratford, Conn.

John F. Hughes, Comptroller, the Perkins-Elmer Corp., Norwalk, Conn.

John F. McDonnell, Budget Manager, Landers, Frary & Clark, New Britain, Conn.

Russell G. Berg, Budget supervisor, Fairbanks, Morse & Co., Beloit, Wisconsin.

William J. Lasater, Assistant to General Works Auditor, U. S. Steel Corp., Garland, Texas.

Leroy O. Kamin, Analyst, All State Insurance Company, Detroit (member-at-large).

NAMED TO NATIONAL COMMITTEE

Mr. E. G. (Buck) Mauck, National President, has announced that Mr. Everett E. Yount, Helene Curtis Industries, Chicago, has accepted the appointment as Midwestern Area Chairman for Chapter Formation Activities, working with H. C. Mason who is Director in Charge of Membership and Chapter Formation for the national group.

BUDGETING BIBLIOGRAPHY

Continuing a Feature started in Business Budgeting Magazine several issues ago. Send in your list of budgeting references.

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Developing Resources for Financial Expansion, (Financial Management Series No. 92), 1949.

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The Financial Executive's Job - With a Section on Criteria of Good Financial Management, (Financial Management Series No. 99), 1952.

Forecasting Financial Requirements, (Financial Management Series No. 87), 1947.

"Guideposts to Better Budgeting," Management Review, May, 1948.

ABOUT OUR AUTHORS

FRED PORT, whose dynamic article reveals some unflattering budgeting shortcomings as seen by factory management, speaks from experience. After obtaining his degree in engineering from the University of Illinois, he secured his masters degree in business administration at University of Chicago, and his doctor's degree in engineering at M.I.T. He since has served as head of combustion engineering department of Republic Steel, Chief engineer and works manager of Cribben & Sexton Co., Chicago, works manager of Hein Werner Corp., Waukesha, works manager of Solar Corporation, Milwaukee, and is now Director of Engineering for Automotive Division, The Electric Storage Battery Co., Cleveland. During World War II he served as chief of purchasing, tank and combat vehicles, U.S.Army, Chicago ordnance. He lives on a 320 acre farm near Waterford, Wisconsin with his wife and five boys, including a new set of twins now one year old.

FRANK ZOELLER is assistant manager of Property Records Department of Allis Chalmers Company. He is a Mechanical Engineer, Accountant, and graduate of Marquette University, Milwaukee. His article on Capital Equipment Replacement Policy is adapted from a talk by him on this subject before members of the Milwaukee Chapter, N.S.B.B., in which he was assisted by Mr. Henry Larsen, also with Allis Chalmers. The talk, needless to say, bought out a raft of questions from members, indicating the great interest in this subject.

D. H. SCHILLER, who takes some of the mystery out of "Operations Research" for us, was educated at the University of Michigan, B.S.E. Mathematics, and M.S.E., Aero Engineering. He was with the University of Chicago for five years, with the Operations Research Section of USAF one year, and with Armour Research Foundation one year, before becoming associated with Caywood-Schiller Associates in Chicago. His article was prepared at the request of the Milwaukee Chapter, N.S.B.B., after a revealing talk before that group by Mr. Schiller on this subject.

THOMAS J. McGANN, professor of Marketing at Marquette University, has had wide experience in both the teaching and business fields. A native of Concord, Mass., he attended Boston College (BA, 1925) Harvard University (MBA, 1927) New York University (CPA, 1949) and Wisconsin State Board of Accountancy (CPA, 1954). His business experience covers service with Jordan Marsh Company, Boston; D. H. Bringham Co., Springfield; Boston Regional Product Market, Inc., Cambridge; Crook & Driscoll Certified Public Accountants, New York; Guild Arts & Crafts Inc., New York. He has taught at Boston College, College of the City of New York, Iona College and Marquette, in various subjects relating to business administration, advertising, salesmanship, marketing research and office practice. He is a member of the American Marketing Association, American Accounting Association, and New York State society of C.P.A.'s.

JOS. GRIMM, JR., graduated from Marquette in 1936, School of Business Administration, B.S. Degree. He is a member of the N.A.C.A. and the Milwaukee Control of the Controllers Institute. He says his hobbies are bowling, golf and fishing. As a bowler in his younger days, Joe carried a lofty 195 average. Now, he says, he's just another one of the boys trying to hit the head pin.

NOTICE

TO ALL MEMBERS OF N. S. B. B.

OFFICIAL NOTICE

The Nominating Committee is getting ready to make its selections to present to the Membership in April. New Officers will take the helm of the Society July 1st, and three new Directors will appear on the Board then. Two of the Directors will be elected for three year terms and one, who will represent Members-at-Large, for a one-year term.

The Nominating Committee, appointed by the Board of Directors, consists of:

Harry P. Kelley, Chairman American Viscose Corp. 1617 Pennsylvania Boulevard Philadelphia 3, Penn.	1954-1955 President, Member of the Philadelphia Chapter; a retiring Director and Member of the Executive Committee.
Walter R. Bunge Inland Steel Corporation 38 South Dearborn Street Chicago 3, Ill.	1951-1952 President; Member of the Milwaukee Chapter; one of the founders of the Society.
Charles L. Lineberger Suttle Equipment Company 135 South LaSalle Street Chicago, Ill.	1953-1954 President; Member of the Chicago Chapter.
Edward G. McFadyen U. S. Rubber Company 1230 Avenue of the Americas New York 20, N.Y.	Member of the New York Chapter; a retiring Director who has been active since the founding of the Society.

This Committee will welcome proposals from the Membership for their slate. They should be sent directly to any of the Committee Members.

In addition to the Nominating Committee's selections, nominations may also be made directly by Members. Article X, Section 12, Sub-section (B), of the Society By-Laws reads,

> *"Nominations may be made in writing signed by ten members, or by the Nominating Committee appointed by the Board of Directors."*

Such nominations directly from Members received by the Secretary,

R. Visscher Millar
Pennsylvania Salt Manufacturing Co.
3 Penn Center Plaza
Philadelphia 2, Pa.

no later than April 17, 1956, will be included in the official ballot mailed to the Membership.

PLAN NOW TO ATTEND

1956 N.S.B.B. NATIONAL CONFERENCE

Cleveland, Ohio – May 24-25, 1956

CONFERENCE THEME – "OPERATION PROFIT"

General Chairman

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MR. CARL O. WESSMAN
Division Controller, Harris-Seybold Company

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Cleveland,

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Financial Statistics Supervisor, U.S. Steel Corp.

Financial Chairman:
MELVIN J. NAGEL
Asst. Budget Director, Thompson Products, Inc.